Santa Barbara County
Air Pollution Control District

PERMIT TO OPERATE 12084
AND
PART 70 MINOR PERMIT MODIFICATION 12084

EQUIPMENT OPERATOR:

BreitBurn Energy Company 300000

EQUIPMENT OWNERS:

BreitBurn Energy Company

EQUIPMENT LOCATION:

Newlove Lease, Orcutt Hill Oilfield, Santa Barbara County, California

STATIONARY SOURCE/FACILITY:

BreitBurn Energy Company SSID: 02667
Newlove Lease - Orcutt Hill Field FID: 03321

PROJECT DESCRIPTION:

This permit authorizes BreitBurn Energy Company (Permittee) to operate Phase 1 of the Diatomite Project, a steam enhanced oil recovery project at the Newlove Lease on the Orcutt Hill production field. The Diatomite Project is proposed to be constructed in two phases. Phase 1, already built, consists of one new 62.5 MMBTU/hr gas fired steam generator, one existing 23 MMBTU/hr gas fired steam generator (permitted under ATC/PTO 11405-01) , two well pods (containing 16 wells per pod for a maximum total of 32 wells), a new tank battery, and a new water polishing system. Project equipment also includes fugitive hydrocarbon components, hydrogen sulfide scrubbers and oil and gas pipelines.

EQUIPMENT DESCRIPTION:

A detailed equipment list is provided in Table 8 of this permit.

PROJECT/PROCESS DESCRIPTION:

Steaming has historically been utilized at Orcutt Hill as a recovery technique but had not been used since the mid-1980's. The goal of the Diatomite Project is to enhance existing oil recovery in the Orcutt Hill Field using down-hole steam injection. Steam is injected into the oil bearing reservoir, reducing the viscosity of the oil and enhancing its recoverability.

The Diatomite Project will be constructed in two phases. The first phase (Phase 1), already installed, includes one 62.5 MMBtu/hr Steam Generator, two well pods, a tank farm, and a water polishing system. The second phase (Phase 2) permitted under ATC 12084 will install two 62.5 MMBtu/hr Steam Generators, four well pods, and a tank farm. Each well pod will have up to 16 wells each. Each phase of the Diatomite Project will also include hydrogen sulfide (H_2S) removal equipment, steam and oil pipelines.

Well steaming consists of injecting steam into several wells in each pod for three to five days. The steam will then be allowed to "soak" in the wells for one to two days before the wells are returned to production. While the first wells are soaking, steam injection is moved to the next set of wells in the pod. This process continues until all wells in the pod have been steamed, after which the cycle is repeated.

This permit addresses Phase 1 of the Diatomite Project. All project equipment may be operated 24 hours a day, 365 days a year. Gas burned in the steam generator is PUC-quality gas, from either the PUC utility line, produced gas from Orcutt Hill (aka "Orcutt Hill field gas"), or a blend of these gases. Produced gas from the Diatomite field burned in the third ring of the burner is also PUC-quality gas. All water used for steam generation is obtained from onsite sources and treated prior to being introduced into the generators.

BreitBurn Energy Company received Permit to Operate (PTO) 11405-01 to operate a 23 MMBtu steam generator that has been used to test three existing wells. This steam generator is also a component of the Diatomite Project, and is required to meet applicable BACT standards.

9.A Standard Administrative Conditions

Section A lists the applicable standard administrative conditions for all equipment in this permit. Conditions listed in this section are enforceable by the USEPA, the APCD, the State of California and the public. Where any reference contained in this section refers to any other part of this permit, that part of the permit referred to is federally enforceable. In case of a discrepancy between the wording of a condition and the applicable federal or APCD rule(s), the wording of the rule shall control.

A.1 **Compliance with Permit Conditions:**

(a) The permittee shall comply with all permit conditions in Sections 9.A, 9.B and 9.C.

(b) This permit does not convey property rights or exclusive privilege of any sort.

(c) Any permit noncompliance constitutes a violation of the Clean Air Act and is grounds for enforcement action; for permit termination, revocation and re-issuance, or modification; or for denial of a permit renewal application.

(d) It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(e) A pending permit action or notification of anticipated noncompliance does not stay any permit condition.

(f) Within a reasonable time period, the permittee shall furnish any information requested by the Control Officer, in writing, for the purpose of determining:

(i) compliance with the permit, or
(ii) whether or not cause exists to modify, revoke and reissue, or terminate a permit or for an enforcement action. [*Re: 40 CFR Part 70.6, APCD Rules 1303.D.1]*

(g) In the event that any condition herein is determined to be in conflict with any other condition contained herein, then, if principles of law do not provide to the contrary, the condition most protective of air quality and public health and safety shall prevail to the extent feasible.

A.2 **Emergency Provisions**: The permittee shall comply with the requirements of the APCD, Rule 505 (Upset/Breakdown rule) and/or APCD Rule 1303.F, whichever is applicable to the emergency situation. In order to maintain an affirmative defense under Rule 1303.F, the permittee shall provide the APCD, in writing, a "notice of emergency" within 2 days of the emergency. The "notice of emergency" shall contain the information/documentation listed in Sections (1) through (5) of Rule 1303.F. [*Re: 40 CFR 70.6, APCD Rule 1303.F*]

A.3 **Compliance Plan:**

(a) The permittee shall comply with all federally-enforceable requirements that become applicable during the permit term, in a timely manner, as identified in the Compliance Plan.

(b) For all applicable equipment, the permittee shall implement and comply with any specific compliance plan required under any federally-enforceable rules or standards. [*Re: APCD Rule 1302.D.2*]

A.4 **Right of Entry:** The Regional Administrator of USEPA, the Control Officer, or their authorized representatives, upon the presentation of credentials, shall be permitted to enter upon the premises where a Part 70 Source is located or where records must be kept:

(a) To inspect the stationary source, including monitoring and control equipment, work practices, operations, and emission-related activity;

(b) To inspect and duplicate, at reasonable times, records required by this Permit to Operate;

(c) To sample substances or monitor emissions from the source or assess other parameters to assure compliance with the permit or applicable requirements, at reasonable times. Monitoring of emissions can include source testing. [*Re: APCD Rule 1303.D.2*]

A.5 **Payment of Fees:** The permittee shall reimburse the APCD for all its Part 70 permit processing and compliance expenses for the stationary source on a timely basis. Failure to reimburse on a timely basis shall be a violation of this permit and of applicable requirements and can result in forfeiture of the Part 70 permit. Operation without a Part 70 permit subjects the source to potential enforcement action by the APCD and the USEPA pursuant to section 502(a) of the Clean Air Act. [*Re: APCD Rules 1303.D.1 and 1304.D.11, 40 CFR 70.6*]

A.6 **Prompt Reporting of Deviations:** The permittee shall submit a written report to the APCD documenting each and every deviation from the requirements of this permit or any applicable federal requirements within 7 days after discovery of the violation, but not later than 180-days after the date of occurrence. The report shall clearly document 1) the probable cause and extent of the deviation, 2) equipment involved, 3) the quantity of excess pollutant emissions, if any, and 4) actions taken to correct the deviation. The requirements of this condition shall not apply to deviations reported to APCD in accordance with Rule 505. *Breakdown Conditions*, or Rule 1303.F *Emergency Provisions*. [APCD Rule 1303.D.1, 40 CFR 70.6(a) (3)]

A.7 **Reporting Requirements/Compliance Certification:** The permittee shall submit compliance certification reports to the USEPA and the Control Officer every six months. These reports shall be submitted on APCD forms and shall identify each applicable requirement/condition of the permit, the compliance status with each requirement/condition, the monitoring methods used to determine compliance, whether the compliance was continuous or intermittent, and include detailed information on the occurrence and correction of any deviations (excluding emergency upsets) from permit requirement. The reporting periods shall be each half of the calendar year, e.g., January through June for the first half of the year. These reports shall be submitted by September 1 and March 1, respectively, each year. Supporting monitoring data shall be submitted in accordance with the "Semi-Annual Monitoring/Compliance Verification Report"

condition in section 9.C. The permittee shall include a written statement from the responsible official, which certifies the truth, accuracy, and completeness of the reports. [*Re: APCD Rules 1303.D.1, 1302.D.3, 1303.2.c*]

A.8 **Federally-Enforceable Conditions:** Each federally-enforceable condition in this permit shall be enforceable by the USEPA and members of the public. None of the conditions in the APCD-only enforceable section of this permit are federally-enforceable or subject to the public/USEPA review. [*Re: CAAA, § 502(b)(6), 40 CFR 70.6*]

A.9 **Recordkeeping Requirements:** Records of required monitoring information shall include the following:

(a) The date, place as defined in the permit, and time of sampling or measurements;
(b) The date(s) analyses were performed;
(c) The company or entity that performed the analyses;
(d) The analytical techniques or methods used;
(e) The results of such analyses; and
(f) The operating conditions as existing at the time of sampling or measurement.

The records (electronic or hard copy), as well as all supporting information including calibration and maintenance records, shall be maintained for a minimum of five (5) years from date of initial entry by BreitBurn Energy and shall be made available to the APCD upon request. [*Re: APCD Rule 1303.D.1.f, 40CFR70.6(a)(3)(ii)(A)*]

A.10 **Conditions for Permit Reopening:** The permit shall be reopened and revised for cause under any of the following circumstances:

(a) Additional Requirements: If additional applicable requirements (e.g., NSPS or MACT) become applicable to the source which has an unexpired permit term of three (3) or more years, the permit shall be reopened. Such a reopening shall be completed no later than 18 months after promulgation of the applicable requirement. However, no such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended. All such re-openings shall be initiated only after a 30-day notice of intent to reopen the permit has been provided to the permittee, except that a shorter notice may be given in case of an emergency.

(b) Inaccurate Permit Provisions: If the APCD or the USEPA determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emission standards or other terms or conditions of the permit, the permit shall be reopened. Such re-openings shall be made as soon as practicable.

(c) Applicable Requirement: If the APCD or the USEPA determines that the permit must be revised or revoked to assure compliance with any applicable requirement including a federally-enforceable requirement, the permit shall be reopened. Such re-openings shall be made as soon as practicable.

Administrative procedures to reopen and revise/revoke/reissue a permit shall follow the same procedures as apply to initial permit issuance. Re-openings shall affect only those parts of the permit for which cause to reopen exists.

If a permit is reopened, the expiration date does not change. Thus, if the permit is reopened, and revised, then it will be reissued with the expiration date applicable to the re-opened permit. [*Re: 40 CFR 70.7, 40 CFR 70.6*]

A.11 **Grounds for Revocation:** Failure to abide by and faithfully comply with this permit shall constitute grounds for the APCO to petition for permit revocation pursuant to California Health & Safety Code Section 42307 *et seq*.

A.12 **Consistency with Analysis:** Operation under this permit shall be conducted consistent with all data, specifications and assumptions included with the application and supplements thereof (as documented in the APCD's project file) and the APCD's analyses under which this permit is issued as documented in the Permit Analyses prepared for and issued with the permit.

A.13 **Equipment Maintenance:** The equipment listed in this permit shall be properly maintained and kept in good condition at all times. The equipment manufacturer's maintenance manual, maintenance procedures and/or maintenance checklists (if any) shall be kept on site.

A.14 **Compliance:** Nothing contained within this permit shall be construed as allowing the violation of any local, state or federal rules, regulations, air quality standards or increments.

A.15 **Severability:** In the event that any condition herein is determined to be invalid, all other conditions shall remain in force.

A.16 **Conflict Between Permits.** The requirements or limits that are more protective of air quality shall apply if any conflict arises between the requirements and limits of this permit and any other permitting actions associated with the equipment permitted herein.

A.17 **Access to Records and Facilities:** As to any condition that requires for its effective enforcement the inspection of records or facilities by the APCD or its agents, the permittee shall make such records available or provide access to such facilities upon notice from the APCD. Access shall mean access consistent with California Health and Safety Code Section 41510 and Clean Air Act Section 114A.

A.18 **Equipment Identification:** Identifying tag(s) or name plate(s) shall be displayed on the equipment to show manufacturer, model number, and serial number. The tag(s) or plate(s) shall be issued by the manufacturer and shall be affixed to the equipment in a permanent and conspicuous position.

A.19 **Emission Factor Revisions.** The APCD may update the emission factors for any calculation based on USEPA AP-42 or APCD emission factors at the next permit modification or permit reevaluation to account for USEPA and/or APCD revisions to the underlying emission factors.

9.B Generic Conditions

The generic conditions listed below apply to all emission units, regardless of their category or emission rates. In case of a discrepancy between the wording of a condition and the applicable federal or APCD rule(s), the wording of the rule shall control.

Section B lists the applicable 'generic' permit conditions, including emission standards for all equipment in this permit. Conditions listed in this section are enforceable by the USEPA, the APCD, the State of California and the public. Where any reference contained in this section refers to any other part of this permit, that part of the permit referred to is federally enforceable. In case of a discrepancy between the wording of a condition and the applicable federal or APCD rule(s), the wording of the rule shall control.

B.1 **Circumvention (Rule 301):** A person shall not build, erect, install, or use any article, machine, equipment or other contrivance, the use of which, without resulting in a reduction in the total release of air contaminants to the atmosphere, reduces or conceals an emission which would otherwise constitute a violation of Division 26 (Air Resources) of the Health and Safety Code of the State of California or of these Rules and Regulations. This Rule shall not apply to cases in which the only violation involved is of Section 41700 of the Health and Safety Code of the State of California, or of APCD Rule 303. [*Re: APCD Rule 301*]

B.2 **Visible Emissions (Rule 302):** The permittee shall not discharge into the atmosphere from any single source of emission any air contaminants for a period or periods aggregating more than three minutes in any one hour which is:

(a) As dark or darker in shade as that designated as No. 1 on the Ringlemann Chart, as published by the United States Bureau of Mines, or

(b) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subsection B.2.(a) above. [*Re: APCD Rule 302*]

B.3 **Nuisance (Rule 303):** No pollutant emissions from any source at the permittee shall create nuisance conditions. Operations shall not endanger health, safety or comfort, nor shall they damage any property or business. [*Re: APCD Rule 303*]

B.4 **Specific Contaminants (Rule 309):** The permittee shall not discharge into the atmosphere from any single source sulfur compounds and combustion contaminants (particulate matter) in excess of the applicable standards listed in Sections A through E of Rule 309. [*Re: APCD Rule 309*].

B.5 **Organic Solvents (Rule 317):** The permittee shall comply with the emission standards listed in Rule 317.B. Compliance with this condition shall be based on the permittee's compliance with Condition C.5 of PTO 8240-R6 and facility inspections. [*Re: APCD Rule 317*]

B.6 **Metal Surface Coating Thinner and Reducer (Rule 322):** The use of photochemically reactive solvents as thinners or reducers in metal surface coatings is prohibited. Compliance with this condition shall be based on the permittee's compliance with Condition C.5 of PTO 8240-R6 and facility inspections. [*Re: APCD Rule 322*]

B.7 **Architectural Coatings (Rule 323):** The permittee shall comply with the coating ROC content and handling standards listed in Section D of Rule 323 as well as the Administrative requirements listed in Section F of Rule 323. Compliance with this condition shall be based on the permittee's compliance with Condition C.5 PTO 8240-R6 and facility inspections. [*Re: APCD Rules 323, 317, 322, 324*]

B.8 **Disposal and Evaporation of Solvents (Rule 324):** The permittee shall not dispose through atmospheric evaporation of more than one and a half gallons of any photochemically reactive solvent per day. Compliance with this condition shall be based on the permittee's compliance with Condition C.5 of PTO 8240-R6 and facility inspections. [*Re: APCD Rule 324*]

B.9 **Emergency Episode Plans (Rule 603):** During emergency episodes, the permittee shall implement the Emergency Episode Plan dated March 30, 1999. [*Reference APCD Rule 603*]

B.10 **Adhesives and Sealants (Rule 353):** The permittee shall not use adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers, or any other primers, unless the permittee complies with the following:

(a) Such materials used are purchased or supplied by the manufacturer or suppliers in containers of 16 fluid ounces or less; or alternately

(b) When the permittee uses such materials from containers larger than 16 fluid ounces and the materials are not exempt by Rule 353, Section B.1, the total reactive organic compound emissions from the use of such material shall not exceed 200 pounds per year unless the substances used and the operational methods comply with Sections D, E, F, G, and H of

Rule 353. Compliance shall be demonstrated by recordkeeping in accordance with Section B.2 and/or Section O of Rule 353. *[Re: APCD Rule 353]*

B.11 **CARB Registered Portable Equipment:** State registered portable equipment shall comply with State registration requirements. A copy of the State registration shall be readily available whenever the equipment is at the facility. [*Re: APCD Rule 202*]

9.C Requirements and Equipment Specific Conditions

Section C lists conditions affecting specific equipment in this permit. Conditions listed in this section are enforceable by the USEPA, the APCD, the State of California, and the public. Where any reference contained in this section refers to any other part of this permit, that part of the permit referred to is federally enforceable. In case of a discrepancy between the wording of a condition and the applicable federal or APCD rule(s), the wording of the rule shall control.

C.1. **Emission Limitations.** The mass emissions from the equipment permitted herein shall not exceed the values listed in Tables 4 and 5. Compliance shall be based on the operational, monitoring, recordkeeping and reporting conditions of this permit.

a. *Steam Generator Oxides of Nitrogen (NO_X) Concentration Emissions Limits*. Emissions of NO_X (as NO_2) from each steam generator subject to this permit shall not exceed a NO_X stack concentration of 9 ppmvd at 3% O_2 or a NO_X stack emission rate of 0.011 lb/MMBtu. Compliance with this condition shall be based on source testing and the monitoring conditions of this permit.

b. *Steam Generator Reactive Organic Compounds (ROC) Concentration Emissions Limits*. Emissions of ROC from each steam generator subject to this permit shall not exceed a ROC stack concentration of 8.5 ppmvd at 3% O_2 or a stack emission rate of 0.004 lb/MMBtu. Compliance with this condition shall be based on source testing and the monitoring conditions of this permit.

c. *Steam Generator Carbon Monoxide (CO) Concentration Emissions Limits*. Emissions of CO from each steam generator subject to this permit shall not exceed a CO stack concentration of 26 ppmvd at 3% O_2 or a stack emission rate of 0.019 lb/MMBtu. Compliance with this condition shall be based on source testing and the monitoring conditions of this permit.

d. *Fugitive Hydrocarbon Emissions Components*. Mass emissions from gas/light liquid service fugitive components shall not exceed the daily, quarterly and yearly ROC limits listed in Table 3. Compliance with this condition shall be based monitoring and emission calculation methodology as documented in Condition C.8 of this permit.

C.2. **Operational Restrictions.** The permitted equipment is subject to the following operational restrictions:

a. *Throughput Limitation*. The following throughput limitations shall not be exceeded:

Phase 1 oil production [(a)]	1,500	bbl/day
Phase 1 gas production [(a)]	340	mscfd

(a) Calculated as monthly production divided by the number of producing days.

b. *VRU Use:* All production storage tanks shall be connected to a vapor recovery/gas collection (VRGC) system. The VRGC system shall be in operation when the equipment connected to the VRGC system at the facility is in use. The VRGC system includes piping, valves, and flanges associated with the VRGC system. The VRGC system shall be maintained and operated to minimize the release of emissions from all systems, including pressure relief valves and gauge hatches.

c. *Heat Input Limits*. The hourly, daily and annual heat input limits to the steam generator under this permit (APCD Device No. 109530) shall not exceed the values listed below. These limits are based on the design rating of the burners and the annual heat input value as listed in the permit application. Compliance shall be based on data recorded in accordance with permit Conditions C.3.b and C.3.c.

Hourly Heat Input	62.500	MMBtu/hour
Daily Heat Input	1500.000	MMBtu/day
Annual Heat Input	547500.000	MMBtu/year

d. *Steam Generator Radiant Section Temperature and Residence Time.* Except during startup and shutdown not to exceed one hour, during periods when no oil or gas is being produced, or when produced gas is diverted to the Orcutt Hill gas gathering system, each steam generator shall maintain a radiant section temperature of at least 1275 °F. Residence time within the combustion chamber shall be maintained at a minimum of 4.88 seconds. Compliance with this condition shall be based on source testing and the monitoring conditions of this permit.

e. If steam generator burner capacity is not available for the purposes of the destruction of produced gas due to burner upset or breakdown, all produced gas from the production vessels shall be diverted to the Orcutt Hill gas gathering system.

f. *Gaseous Fuel Sulfur Limit*. The total sulfur content (calculated as H_2S at standard conditions, 60^o F and 14.7 psia) of the gaseous fuel burned as fuel in the steam generators at the facility shall not exceed the following:

i. PUC gas/Orcutt Hill field gas/Diatomite produced gas: The maximum concentration of total reduced sulfur compounds in all fuel gas to the steam generator (calculated as H_2S at standard conditions, 60 °F and 14.7 psia), shall not exceed 1.36 grains per 100 cubic feet (23 ppm_v).

ii. All Diatomite Project produced gas and Orcutt Hill Field produced gas to be burned in the project steam generators shall be treated by the SulfaTreat system or an equivalent APCD approved system.

C. 3. **Monitoring.** The permitted equipment is subject to the following monitoring requirements:

a. The volumes of oil (in bbls) produced from each production phase shall be measured through the used of calibrated meters or through the use of an APCD-approved alternate method. The meters shall be calibrated according to manufacturer's specifications and the calibration records shall be made available to the APCD upon request.

b. The volumes (in scf) of (1) PUC quality natural gas (including that blended with Orcutt Hill Field produced gas) and (2) Diatomite project produced gas burned in the steam generator shall be measured through the use of calibrated meters or through the use of an APCD-approved alternate method. The meters shall be calibrated according to manufacturer's specifications and the calibration records shall be made available to the APCD upon request.

c. The higher heating value (HHV in Btu/scf) of the PUC quality natural gas shall be measured annually; the HHV of PUC quality gas blended with Orcutt Hill Field produced gas, and of Diatomite project produced gas combusted in the steam generator, shall be measured quarterly. Measurement shall be in accordance with ASTM D-3588 or an APCD-approved method. Records shall be kept on site and made available for inspection by the APCD upon request.

d. On an annual basis, at Wash Tank T-340 (APCD Device No. 109487), or other storage tanks if requested in writing by the APCD, (1) the API gravity shall be measured and recorded, and (2) the true vapor pressure (TVP) at the maximum expected temperature of the crude oil shall be measured by using ASTM method D 323-82 (if API gravity is equal to or greater than 20 degrees) or the HOST Method (if API gravity is under 20 degrees), and recorded. Samples of crude oil shall be obtained from an active flow line into any tank sampled, or from the tank, provided that there is an active flow of crude oil into the tank.

If ASTM D323 applies, the TVP at the maximum expected temperature shall be calculated from the Reid vapor pressure in accordance with API Bulletin 2518, or

equivalent Reid/true vapor pressure correlation. The calculated true vapor pressure shall be based on the maximum expected operating temperature for each crude oil storage tank.

e. The temperature of the radiant section of the steam generator shall be continuously measured using a thermocouple or equivalent temperature measurement device approved by the APCD.

f. *FGR Operating Monitoring* - The steam generator burner windbox shall be equipped with an oxygen monitor. The burner windbox operating O_2 shall be continuously monitored and the O_2% value displayed when the steam generator is operating. Within 30 days of final issuance of this permit, BreitBurn shall submit for APCD review and approval an updated *Process Monitor Calibration and Maintenance Plan* to specify the O2 burner windbox set point established for BACT compliance.

g. The H_2S concentration of Diatomite Project gas treated by the SulfaTreat system and routed to the steam generators shall be measured monthly using detector tubes. In addition, sampling and lab analysis for total sulfur shall be conducted annually by ASTM 1072 or an alternative APCD-approved analysis method. Sampling shall occur immediately downstream of the SulfaTreat system.

h. The H2S concentration of the PUC utility gas blended with Orcutt Hill Field produced gas burned by the steam generator shall be measured weekly using detector tubes. In addition, sampling and lab analysis for total sulfur shall be conducted quarterly by ASTM 1072 or an alternative APCD-approved analysis method. Sampling shall occur immediately downstream of the 2" 150 psi mixing point, prior to combustion in the steam generator.

i. All monitoring shall be conducted in accordance with the APCD-approved *Process Monitor Calibration and Maintenance Plan.*

j. Process monitors shall measure process stream pressures upstream of PSV-V300A, PSV-V300B, PSV-H305A, PSV-V315, PSV-V380A and PSV-V380B. Output signals from each monitor shall be transmitted to the project control room and shall initiate operator alarm or process shutdown at pre-set levels per permit Condition C.10.

k. A proximity switch shall be installed on each production storage tank pressure relief valve and hatch with the output signal sent to an APCD approved recording device to document the duration of any atmospheric releases of production gas.

l. The permittee shall perform monthly monitoring for fugitive emissions of each project component included in the component categories listed in Table 3 in accordance with the provisions of the APCD approved *Fugitive Emissions Inspection and Maintenance Plan*

for the Diatomite Project (I&M Plan). The I&M Plan shall be implemented for the life of the project. The I&M Plan shall contain the information required per Rule 331.I.1. In addition, it shall include a listing of each individual component and the applicable TOC ppmv leak detection and repair (LDAR) threshold for each component as specified in Table 7 of this permit. The monitoring method shall adhere to the requirements of Rule 331.H.1. If the monthly monitored value of a component exceeds the LDAR threshold, permittee shall repair the component within five (5) days. However, permittee shall adhere to the Rule 331.E.1 repair timeline for liquid leaks (i.e. repair within 24 hours from detection) and non-critical component gas leaks greater than 50, 000 ppmv (i.e. repair within 1 day from detection). An inspection log shall be maintained consistent with Rule 331.G.4.

C. 4. **Recordkeeping.** The following records shall be maintained by the permittee and shall be made available to the APCD upon request:

a. The volume of oil produced from each project phase each month and the number of days that oil was produced through each tank battery.

b. On an annual basis, the API gravity and true vapor pressure as determined per Condition C.3.d.

c. The volume of (1) PUC natural gas (including Orcutt Hill Field produced gas when blended) and, (2) Diatomite project produced gas combusted each month (in units of standard cubic feet) in the steam generator and the number of days per month that the steam generator operated.

d. The H_2S and total sulfur content of fuel gas (i.e., Diatomite Project produced gas and PUC/Orcutt Hill Field produced gas blend) per Condition C.3g. and h.

e. On a quarterly basis the higher heating value (HHV) in Btu/scf of the PUC natural gas/Orcutt Hill Field produced gas blend.

f. On a quarterly basis, the higher heating value (HHV) of the Diatomite Project produced gas (Btu/scf).

g. The total sulfur content of the PUC natural gas based on utility gas analyses.

h. Dates of SulfaTreat reactant change-out for each vessel.

i. Records required by the following APCD Rules: 325.F, 331.G, and 344.G. Also records for Rule 343.F if applicable.

j. Dates, start and end times and total duration of all automatic process shutdowns at V-300 initiated by pressure monitors listed in permit Condition C.10.

k. Date and time of any rupture disk inspection required by the initiation of any alarm corresponding to release pressure and a notation whether the disk was found intact or burst. If the rupture disk was found in a burst condition, record the date, start and end times, total time duration, and calculated quantity of uncontrolled produced gas emitted from atmospheric releases at the PSVs as required in permit Condition C.10.

l. Date, start and end times, total duration, and calculated quantity of uncontrolled produced gas emitted from atmospheric releases as sensed by any storage tank proximity switch.

m. On an annual basis, the amount of coatings and solvents used. This information must be logged for each coating or solvent. The log shall list (for each material) the quantity of material used, the VOC content, whether the material is photochemically reactive per the definition of Rule 102.F, and whether the material was applied to a surface or disposed of. A Material Safety Data Sheet (MSDS), or other product specification sheet, which specifies the VOC content of the material, shall be maintained with the log. These records may be maintained on a field or lease basis.

n. On a monthly and quarterly basis, the date, time and results (ppmv TOC) of each fugitive component measurement and the date and time of each repair action triggered per the BACT LDAR thresholds, date of re-inspection and ppmv or drop-per-minute reading following repair. (reference permit Condition C.3.l).

C.5. **Reporting.** Twice a year, BreitBurn Energy Company shall submit a compliance verification report to the APCD. Each report shall document compliance with all permit conditions, rules or other statutory requirements during the prior two calendar quarters. The report shall be submitted by March 1st and September 1st each year. The report shall contain information necessary to verify compliance with the emission limits and other requirements of this permit and shall document compliance separately for each calendar quarter. The report shall be in a format approved by the APCD. All logs and other basic source data not included in the report shall be made available to the APCD upon request. The report shall include the following information:

a. The volume of oil produced from each phase each month and year, and the number of days each month that oil was produced through each tank battery.

b. API gravity, true vapor pressure and storage temperature of each organic liquid tank for each phase.

c. The volume of PUC natural gas (including Orcutt Hill Field produced gas when blended) and Diatomite project produced gas combusted each month (in units of standard cubic feet) in the steam generator and the number of days per month that the steam generator operated.

d. On a quarterly basis the higher heating value (HHV) in Btu/scf of the PUC natural gas/Orcutt Hill Field produced gas blend.

e. On a quarterly basis, the higher heating value (HHV) in Btu/scf of the Diatomite Project produced gas.

f. The results of all H_2S and total sulfur measurements of gas treated by the SulfaTreat system, and of gas burned in the steam generator.

g. Dates, start and end times and total hour duration of all automatic process shutdowns at V-300 initiated by pressure monitors listed in permit Condition C.10.

h. Date, start and end times, total duration, and calculated quantity of uncontrolled produced gas emitted from atmospheric releases as sensed by any storage tank proximity switch.

i. Date and time of any rupture disk inspection that found any rupture disk listed in permit Condition C.10 in a burst condition and the resultant duration of any gas released to the atmosphere and the calculated amount of uncontrolled production gas (in scf and pounds of ROC) released to the atmosphere.

j. By month, number of components by category inspected, number of leaks by component category ≥ 10K ppmv total hydrocarbons, dates and leak repair method for each component.

k. On an annual basis, a log showing the amount of all coatings and solvents used. Reporting may be included in the annual stationary source coating and solvents report as required by PTO 8240-R6.

l. Rule 331 fugitive hydrocarbon I&M program data:

   i. Record of leaking components;
   ii. Record of leaks from critical components;
   iii. Record of leaks from components that incur five repair actions within a continuous 12-month period; and,
   iv. Record of component repair actions including dates of component re-inspections

m. On a monthly and quarterly basis, the date, time and results (ppmv TOC) of each fugitive component measurement and the date and time of each repair action triggered per the BACT LDAR thresholds, date of re-inspection and ppmv or drop-per-minute reading following repair (reference permit condition 3.l).

n. Annual NOx and ROC emissions from both permitted and exempt equipment.

o. Fugitive ROC emissions (tons) by quarter computed in accordance with Condition C.8.

C.6. **Best Available Control Technology (BACT).** The permittee shall apply emission control technology and plant design measures that represent Best Available Control Technology ("BACT") to the operation of the equipment/facilities as described in this permit and the APCD's Permit Evaluation for this permit. Table 7 and the Emissions, Operational, Monitoring, Recordkeeping and Reporting Conditions of this permit define the specific control technology and performance standard emission limits for BACT. The BACT shall be in place, and shall be operational at all times, for the life of the project. BACT related monitoring, recordkeeping and reporting requirements are defined in those specific permit conditions.

The previously permitted 23 MMBTU/hr steam generator (Device ID 104992) shall comply with the BACT standards in Table 7 for steam generators.

C.7. **Source Testing.** The following source testing provisions shall apply:

a. The permittee shall conduct source testing of air emissions and process parameters listed in Table 6 of this permit. More frequent source testing may be required if the equipment does not comply with permitted limitations or if other compliance problems, as determined by the APCD, occur. Source testing shall be performed on an annual schedule in January of each year. Testing to determine ROC destruction efficiency shall only be required upon written notification by the APCD.

b. The permittee shall submit a written source test plan to the APCD for approval at least thirty (30) days prior to initiation of each source test. The source test plan shall be prepared consistent with the APCD's Source Test Procedures Manual (revised May 1990 and any subsequent revisions). The permittee shall obtain written APCD approval of the source test plan prior to commencement of source testing. The APCD shall be notified at least ten (10) calendar days prior to the start of source testing activity to arrange for a mutually agreeable source test date when APCD personnel may observe the test.

c. Source test results shall be submitted to the APCD within forty-five (45) calendar days following the date of source test completion and shall be consistent with the requirements approved within the source test plan. Source test results shall document the permittee's compliance status with mass emission rates in Table 1 and applicable permit conditions

and rules. For determining compliance with daily emission limits, the applicable pounds per day value in Table 1 shall be divided by 24 to convert to a "pounds per hour equivalent limit". If the source test "pounds per hour" result for a pollutant exceeds the "pounds per hour equivalent limit", then the source is not in compliance with the pounds per day permitted limit for the applicable pollutant. All APCD costs associated with the review and approval of all plans and reports and the witnessing of tests shall be paid by the permittee as provided for by APCD Rule 210.

d. A source test for an item of equipment shall be performed on the scheduled day of testing (the test day mutually agreed to) unless circumstances beyond the control of the operator prevent completion of the test on the scheduled day. Such circumstances include mechanical malfunction of the equipment to be tested, malfunction of the source test equipment, delays in source test contractor arrival and/or set-up, or unsafe conditions on site. Except in cases of an emergency, the operator shall seek and obtain APCD approval before deferring or discontinuing a scheduled test, or performing maintenance on the equipment item on the scheduled test day. If the test cannot be completed on the scheduled day, then the test shall be rescheduled for another time with prior authorization by the APCD. Once the sample probe has been inserted into the exhaust stream of the equipment unit to be tested (or extraction of the sample has begun), the test shall proceed in accordance with the approved source test plan. In no case shall a test run be aborted except in the case of an emergency or unless approval is first obtained from the APCD. Failing to perform the source test of an equipment item on the scheduled test day without a valid reason and without APCD's authorization shall constitute a violation of this permit. If a test is postponed due to an emergency, written documentation of the emergency event shall be submitted to the APCD by the close of the business day following the scheduled test day.

The timelines in a, b, and c above may be extended for good cause provided a written request is submitted to the APCD at least three (3) days in advance of the deadline, and approval for the extension is granted by the APCD.

C.8. **Fugitive Hydrocarbon Components.** Fugitive hydrocarbon emissions shall be computed quarterly and annually consistent with APCD Policy and Procedure 6100.072.1998 *Using Correlation Equation Methodology to Estimate Mass ROC Emissions at O&G Facilities* (CE Method P&P). The following requirements apply:

a. Permittee shall provide a component inventory for each phase of the project according to provisions of the APCD CE Method P&P. The inventory shall be separated into component categories (valves, flanges, connectors, compressor seals, pump seals, pressure relief devices (PRD), open-ended lines, other) and service (gas/light liquid and oil).

b. On a monthly basis, each project fugitive component identified in the fugitive component count required above shall be monitored for leaks.

c. The Screening Value Range Factor (SVRF) from the CE Method P&P, Table SVRF-1 shall be used to calculate fugitive emissions of THC for each fugitive component. The appropriate SVRF for each component is determined by service (gas/light liquid and oil), component type (valves, pump seals/compressor seals, others, connectors, flanges, and open-ended lines), and by the THC compound screening values (<10K for non-leaking components and ≥ 10K for leaking components). ROC/THC ratios are assigned to each component from APCD Policy and Procedure 6100.061.1998 *Determination of Fugitive Hydrocarbon Emissions at Oil and Gas Facilities Through the Use of Facility Component Counts.*

d. SVRFs for leaking components shall be applied for the entire monthly monitoring period and fugitive ROC emissions calculated by month.

e. Fugitive component ROC emissions shall be totaled on a calendar quarter basis and compared to the quarterly ROC fugitive component emissions limit established in Table 3 of this permit. Any calendar quarter total of fugitive component ROC emissions exceeding the quarterly Table 3 limit is a violation of this permit.

C.9. **Requirements for Produced Gas.** The emissions of produced gas shall be controlled at all times using a properly maintained and operated system that directs all produced gas, except gas used in a tank battery vapor recovery system, to one of the following: (a) A system handling gas for fuel, sale, or underground injection; or (b) A flare that combusts reactive organic compounds; or (c) A device with an ROC vapor removal efficiency of at least 90% by weight. The provisions of this condition shall not apply to wells which are undergoing routine maintenance.

C.10. **Minimization of Atmospheric Releases.** The process shall be operated to prevent routine releases of uncontrolled production gas to the atmosphere from any pressure safety valve (PSV). PSV-H305A, PSV-V315, PSV-V380A, and PSV-V380B each shall be fitted with a rupture disk with a disk rupture setting at the release pressure shown in the table below. In order to avoid process upsets resulting in atmospheric relief venting; pressure monitors shall measure the process stream pressure at vessels V-300, V-380A, and V-380B.

If pressure sensors measure any alarm pressure or automatic shutdown pressure at V-300, V-380A or V-380B, the following shall be initiated:

Pressure monitor output measures an alarm pressure: Process control room alarm shall be triggered at the alarm pressure specified in the *Process Monitor Calibration and Maintenance Plan*. Operator shall take action to return the plant to normal operating pressures.

Pressure monitor output measures an automatic shutdown pressure: Process control room alarm shall be triggered at the automatic shutdown pressure specified in the *Process Monitor Calibration and Maintenance Plan*. An automatic process shutdown shall occur preventing production fluid and gas from entering V-300 at the inlet to V-300 and at Well Manifolds M-410 and M-420.

If pressure sensors measure any release pressure shown in the table below at V-300, H-305, V-315, V-380A, and V-380B, the following shall be initiated:

Pressure monitor output measures a release pressure of 150 psig at V-300, H-305, V-315 or 100 psig at V-380A or V-380B: Process control room alarm shall be triggered. A process shutdown shall occur preventing production fluid and gas from entering V-300 at the inlet to V-300 and at Well Manifolds M-410 and M-420.

Any pressure sensor output at vessels V-300, V-380A, or V-380B at or above the alarm pressure or the automatic shutdown pressure as specified in the *Process Monitor Calibration and Maintenance Plan*, or any PSV pressure sensor output at vessels V-300, H-305, V-315, V-380A, or V-380B at or above the release pressure in the table below shall be recorded and an alarm shall be triggered immediately to notify plant operators. Permittee shall notify the APCD of any release pressure alarm via telephone or email (attn: Orcutt Hill Project Manager) as soon as possible on the day of the alarm but no later than four hours after the start of the next business day.

Any PSV pressure transmitter located downstream of a rupture disk measuring a pressure in excess of atmospheric pressure shall be deemed as evidence of a burst rupture disk and evidence of an uncontrolled production gas release to the atmosphere. The duration of the release shall be defined as the duration of the release alarm at the PSV. Any rupture disk deemed in a burst condition shall be replaced within 24 hours of the onset of the release pressure alarm.

Permittee shall maintain a log of the date and time of all release pressure alarms triggered. The log shall include the time of any vessel release to the atmosphere, the date of rupture disk replacement after a release, the duration and quantity of any gas released to the atmosphere as indicated by the downstream pressure transmitter and any corrective action taken. The log shall be available upon APCD request.

Vessel	PSV ID	Release Pressure (psig)	Release Point
V - 300	PSV-V300A	150	Wash Tank
V - 300	PSV-V300B	150	Wash Tank
H - 305	PSV-H305A	150	Atmosphere
V - 315	PSV-V315	150	Atmosphere
V - 380A	PSV-V380A	100	Atmosphere
V - 380B	PSV-V380B	100	Atmosphere

C.11. **Well Operation and Well Shutdown**: Steamed wells shall not be blown down to atmosphere. All produced steam, gas, and oil shall be routed to the production gathering system. Automatic well shutdown shall occur at or above a process stream pressure of 90 psig at the M-410 and M-420 Well Manifold. Well shutdown events (date and duration) shall be entered into log maintained as required by permit Condition C.10. The log shall be available upon APCD request.

C.12. **Documents Incorporated by Reference.** The documents listed below and any APCD approved updates thereof, are incorporated herein and shall have the full force and effect of a permit condition for this permit. The documents shall be implemented for the life of the Diatomite Project and shall be made available to APCD inspection staff upon request.

- Enhanced Fugitive Hydrocarbon Inspection and Maintenance Plan (APCD approved November 21, 2007)
- Process Monitor Calibration and Maintenance Plan (APCD approved November 16, 2007)
- Fuel Use Monitoring Plan for the Diatomite Project (APCD approved August 25, 2008)

AIR POLLUTION CONTROL OFFICER

DATE

Notes:
1. Next reevaluation due March 29, 2009

Attachments: Permit Evaluation for PTO 12084

Table 1
BreitBurn Newlove Lease: Diatomite Project
PTO 12084
Operating Equipment Description

		Device Specifications					Usage Data			Max Operating Schedule			
Equipment Category	**Description**	**Dev No**	**Feed**	**Parameter**	**Size**	**Units**	**Capacity**	**Units**	**Load**	**hr**	**day**	**qtr**	**year**
Phase I													
Combustion	Steam Generator	109530		PUC/prod gas	62.5	MMBTU/hr			1.0	1.0	24	2,190	8,760
				TVP									
Tanks	Crude Tank	109488	Crude	1.800	2,100	bbls	1,500	bbl/day	1.0	1.0	24	2,190	8,760
	Wash Tank	109487	O/W	3.000	5,480	bbls	2,000	bbl/day	1.0	1.0	24	2,190	8,760
	Reject Tank	109489	O/W	3.000	2,100	bbls	1,500	bbl/day	1.0	1.0	24	2,190	8,760
	Produced Water Tank	109486	Water	-	2,800	bbls	--	--	1.0	1.0	24	2,190	8,760
				Service									
Fugitive Components	Valves, Connectors, Flanges, etc.		--	Gas/Lt Liq	5,763	comp	0.31	ROC/TOC	1.0	1.0	24	2,190	8,760

Table 2
BreitBurn Newlove Lease: Diatomite Project
PTO 12084
Equipment Emission Factors

			Emission Factors							
Equipment Category	**Description**	**Dev No**	**NO_X**	**ROC**	**CO**	**SO_X**	**PM**	**PM_{10}**	**Units**	**Notes**
Phase I										
Combustion	Steam Generator	109530	0.011	0.004	0.019	0.004	0.006	0.006	lb/MMBTU	A
Tanks	Crude Tank	109488	See attached worksheets for emission factors.							
	Wash Tank	109487								
	Reject Tank	109489								
	Produced Water Tank	109486	--	0.0004	--	--	--	--	lb/ft^2-day	
Fugitive Components	Valves, Connectors, Flanges, etc.		See attached worksheet for emission factors.						lb/comp-day	B

Notes:

A - NOx, ROC, and CO em factors: manufacturers specs; SOx em factor: mass balance based on 23 ppmv S content as H2S and 1050 BTU/scf; PM, PM10: AP-42, Table 1.4-2

B - Screening Value Range Factor (SVRF) emission factors found in APCD Policy and Procedure 6100.072.1998

Table 3
BreitBurn Newlove Lease: Diatomite Project
PTO 12084
Summary of Fugitive Emission Estimates Per APCD P&P 6100.072.1998

Phase 1																		
Category	Product	Number of Components Month 1			Number of Components Month 2			Number of Components Month 3			THC SVRF (lb/comp-day)		ROC/ THC	lb/mo (#1)	lb/mo (#2)	lb/mo (#3)	ROC lb/day	ROC TPQ	ROC TPY
		leaks <10K	leaks ≥10K	Total	leaks <10K	leaks ≥10K	Total	leaks <10K	leaks ≥10K	Total	leaks <10K	leaks ≥10K							
Valves	Gas/Lt Liq	1079	1	1080	1080	0	1080	1080	0	1080	1.85E-03	7.33E+00	0.31	87.94	18.84	18.84	2.89	0.06	0.25
Others	Gas/Lt Liq	530	1	531	531	0	531	531	0	531	1.27E-02	9.76E+00	0.31	155.50	63.59	63.59	5.11	0.14	0.57
Connectors	Gas/Lt Liq	2941	1	2942	2941	1	2942	2941	1	2942	6.35E-04	1.37E+00	0.31	30.53	30.53	30.53	1.00	0.05	0.18
Flanges	Gas/Lt Liq	1197	1	1198	1198	0	1198	1198	0	1198	1.48E-03	3.23E+00	0.31	47.16	16.72	16.72	1.55	0.04	0.16
Open-ended lines	Gas/Lt Liq	0	0	0	0	0	0	0	0	0	1.27E-03	2.90E+00	0.31	0.00	0.00	0.00	0.00	0.00	0.00
Compressors	Gas/Lt Liq	1	1	2	2	0	2	2	0	2	3.07E-02	3.80E+00	0.31	36.12	0.58	0.58	1.19	0.02	0.07
Pumps	Gas/Lt Liq	9	1	10	10	0	10	10	0	10	3.07E-02	3.80E+00	0.31	38.44	2.89	2.89	1.26	0.02	0.09
Total		**5757**	**6**	**5763**	**5762**	**1**	**5763**	**5762**	**1**	**5763**							**13.01**	**0.33**	**1.32**

Note: Enforceable emissions limits in this table are Total for ROC lb/day (daily), ROC TPQ (calendar quarter), and ROC TPY (calendar year).

Table 4
BreitBurn Newlove Lease: Diatomite Project
PTO 12084
Hourly and Daily Emissions

			NO_X		ROC		CO		SO_X		PM		PM_{10}	
Equipment Category	**Description**	**Dev No**	**lb/hr**	**lb/day**	**lb/hr**	**lb/day**	**lb/hr**	**lb/day**	**lb/hr**	**lb/day**	**lb/hr**	**lb/day**	**lb/hr**	**lb/day**
Phase I														
Combustion	Steam Generator	109530	0.69	16.50	0.25	5.93	1.19	28.50	0.23	5.55	0.38	9.00	0.38	9.00
Tanks	Crude Tank	109488			0.01	0.27								
	Wash Tank	109487			0.01	0.27								
	Reject Tank	109489			0.01	0.28								
	Produced Water Tank	109486			0.01	0.21								
Fugitive Components	Valves, Connectors, Flanges, etc.				0.54	13.01								
Phase 1 Subtotal			**0.69**	**16.50**	**0.83**	**19.97**	**1.19**	**28.50**	**0.23**	**5.55**	**0.38**	**9.00**	**0.38**	**9.00**

Table 5
BreitBurn Newlove Lease: Diatomite Project
PTO 12084
Quarterly and Annual Emissions

			NO_X		ROC		CO		SO_X		PM		PM_{10}	
Equipment Category	**Description**	**Dev No**	**TPQ**	**TPY**	**TPQ**	**TPY**	**TPQ**	**TPY**	**TPQ**	**TPY**	**TPQ**	**TPY**	**TPQ**	**TPY**
Phase I														
Combustion	Steam Generator	109530	0.75	3.01	0.27	1.08	1.30	5.20	0.25	1.01	0.41	1.64	0.41	1.64
Tanks	Crude Tank	109488			0.01	0.05								
	Wash Tank	109487			0.01	0.05								
	Reject Tank	109489			0.01	0.05								
	Produced Water Tank	109486			0.01	0.04								
Fugitive Components	Valves, Connectors, Flanges, etc.				0.33	1.32								
Phase 1 Subtotal			**0.75**	**3.01**	**0.65**	**2.59**	**1.30**	**5.20**	**0.25**	**1.01**	**0.41**	**1.64**	**0.41**	**1.64**

Table 6
Steam Generator Source Test Requirements

Emission Points	Pollutants/Parameters	Test Method
Stacks (outlet)	NO_X – ppmv & lb/mmBTU	EPA Method 7E
	CO - ppmv & lb/mmBTU	EPA Method 10
	ROC – ppmv, lb/mmBTU, lb/hr	EPA Method 18
	Sampling Point Dtr	EPA Method 1
	Stack Gas Flow Rate	EPA Method 2
	O_2, CO_2, Dry Mol Wt	EPA Method 3
	Moisture Content	EPA Method 4
Inlet	ROC[f] – lb/hr	
	Destruction Efficiency[f]	
Gas Line	Fuel Gas Flow	Device Gas Meter
	Higher Heating Value	ASTM D-1826-88
	Total Sulfur Content	ASTM D-1072
Steam Generator	Residence Time (seconds)	Calculated[e]

Site Specific Requirements

a. Alternative methods may be acceptable on a case-by-case basis.

b. This test is required to characterize the maximum hourly potential to emit when fired on natural gas for NO_X, CO and ROC in both units of ppmvd (at standard conditions and 3% O_2) and pounds per hour. The test shall be performed at the maximum attainable firing rate allowed by this permit.

c. The emission rates shall be based on EPA Methods 2 and 4, or Method 19 along with the heat input rate.

d. For NO_X, CO and O_2, a minimum of three 40-minute runs shall be obtained during each test. An ROC sample for each run shall be taken over a minimum of 5 minutes in accordance with the sampling protocol defined in the source test plan.

e. Residence time shall be calculated based on volumetric flow at actual conditions on a wet basis and nominal interior dimensions of the combustion section of each steam generator.

f. Destruction efficiency applies to the destruction of produced gas in the center burner of the steam generators only; only required upon written notification by the APCD.

Table Notes

ROC = Reactive Organic Compounds per APCD Rule 102
Dtr = Determination

Table 7
Best Available Control Technology

Emission Source	Pollutant	BACT Technology	BACT Performance Standard
Steam Generator	NO_x	Ultra Low NO_x burner with automatic excess O_2 trim controller and flue gas recirculation (FGR)	9 ppmv NO_x exhaust emission concentration corrected to 3% O_2 or exhaust emission rate of 0.011 lbs/MMBTU
Steam Generator	ROC	Same as above	8.5 ppmv ROC exhaust emission concentration corrected to 3% O_2 or exhaust emission rate of 0.004 lbs/MMBTU
Fugitive Comps - Valves	ROC	Bellows, diaphragm seal, spring-loaded packing, expandable packing, graphite packing, PTE-coated packing, precision machined stem, sealant injection,	LDAR: 100 ppmv THC
Fugitive Comps - PRD	ROC	Vented to vapor recovery or closed vent, soft-seat design	PRDs not vented to vapor recovery or closed vent system are subject to LDAR: 100 ppmv THC
Fugitive Comps - Other	ROC	Welded, new gasket rated to 150% of process pressure at process temperature	LDAR: 100 ppmv THC
Fugitive Comps - Connectors	ROC	Welded, new gasket rated to 150% of process pressure at process temperature	LDAR: 100 ppmv THC
Fugitive Comps - Flanges	ROC	Welded, new gasket rated to 150% of process pressure at process temperature	LDAR: 100 ppmv THC
Fugitive Comps – Compressor Seals (Reciprocating Drives)	ROC	Vented to vapor recovery, elastomer bellows, O-ring seals, dry running secondary containment seals	LDAR: 100 ppmv THC
Fugitive Comps – Compressor Seals (Rotary Drives)	ROC	Vented to vapor recovery or closed vent, dual/tandem mechanical seals, leakless design (e.g. magnetic drive)	LDAR: 100 ppmv THC
Fugitive Comps – Pump Seals	ROC	Vented to vapor recovery or closed vent, dual/tandem mechanical seals	LDAR: 500 ppmv THC

Table 8
Equipment List

PTO 12084 / FID: 03321 Newlove Lease / SSID: 02667

A PERMITTED EQUIPMENT

1 Diatomite Phase 1

1.1 Combustion - Phase 1

1.1.1 Steam Generator

Device ID #	**109530**	***Device Name***	**Steam Generator**
Rated Heat Input		*Physical Size*	62.50 MMBtu/Hour
Manufacturer	BYIS Manuf	*Operator ID*	SG-100
Model		*Serial Number*	
Location Note			
Device Description	Generator design: 1160 psig @ 564F Burner is North American Mfg Model 4211-24G-LE ultra low NOx design with a Rosemount World Class 3000 excess O2 trim control and flue gas recirculation (FGR).		

1.2 Tank Battery - Phase 1

1.2.1 Wash Tank

Device ID #	**109487**	***Device Name***	**Wash Tank**
Rated Heat Input		*Physical Size*	5480.00 BBL
Manufacturer	TARSCO	*Operator ID*	T-340
Model		*Serial Number*	3546-2
Location Note			
Device Description	30' DIA x 32' HIGH		

1.2.2 Clean Oil Tank

Device ID #	**109488**	***Device Name***	**Clean Oil Tank**
Rated Heat Input		*Physical Size*	2100.00 BBL
Manufacturer	TARSCO	*Operator ID*	T-350
Model		*Serial Number*	3546-3
Location Note			
Device Description	25' DIA x 24' HIGH		

1.2.3 Reject Oil Tank

Device ID #	**109489**	***Device Name***	**Reject Oil Tank**
Rated Heat Input		*Physical Size*	2100.00 BBL
Manufacturer	TARSCO	*Operator ID*	T-360
Model		*Serial Number*	3545-4
Location Note			
Device Description	25' DIA x 24' HIGH		

1.2.4 Produced Water Tank

Device ID #	**109486**	***Device Name***	**Produced Water Tank**
Rated Heat Input		*Physical Size*	2800.00 BBL
Manufacturer	TARSCO	*Operator ID*	T-330
Model		*Serial Number*	3546-1
Location Note			
Device Description	25' DIA (490.87 SF) x 32' HIGH		

1.3 Fugitive Components - Phase 1

1.3.1 Wellheads 1-30

Device ID #	**109497**	***Device Name***	**Wellheads 1-30**
Rated Heat Input		*Physical Size*	30.00 Total Wells
Manufacturer		*Operator ID*	TBD
Model		*Serial Number*	
Location Note			
Device Description			

1.3.2 Fugitive Components - Correlation Equation Method

Device ID #	**109516**	***Device Name***	**Fugitive Components - Correlation Equation Method**
Rated Heat Input		*Physical Size*	
Manufacturer		*Operator ID*	
Model		*Serial Number*	
Location Note			
Device Description	Emissions calc based on Correlation Equation Method; low leak BACT component design; LDAR thresholds; monthly inspection 2 Compressor Seals Screened 2942 Connectors Screened 1198 Flanges Screened 0 Open-Ended Lines Screened 531 Other Screened 10 Pump Seals Screened 1080 Valves Screened		

1.4 Vapor Recovery Unit - Phase 1

1.4.1 Vapor Compressor

Device ID #	**109482**	***Device Name***	**Vapor Compressor**
Rated Heat Input		*Physical Size*	20.00 Horsepower (Electric Motor)
Manufacturer		*Operator ID*	P-515B
Model		*Serial Number*	
Location Note			
Device Description	200 MSCFD @ 20psig; part of VRU		

1.4.2 Vapor Compressor

Device ID #	**109481**	***Device Name***	**Vapor Compressor**
Rated Heat Input		*Physical Size*	20.00 Horsepower (Electric Motor)
Manufacturer		*Operator ID*	P-515A
Model		*Serial Number*	
Location Note			
Device Description	200 MSCFD @ 20psig; part of VRU		

1.4.3 VRU Inlet Heat Exchanger - Fin Fan

Device ID #	**109463**	***Device Name***	**VRU Inlet Heat Exchanger - Fin Fan**
Rated Heat Input		*Physical Size*	5.00 Horsepower (Electric Motor)
Manufacturer		*Operator ID*	H-510A
Model		*Serial Number*	
Location Note			
Device Description	Part of VRU		

1.4.4 VRU Compressor Discharge Heat Exchanger - Fin Fan

Device ID #	**109464**	***Device Name***	**VRU Compressor Discharge Heat Exchanger - Fin Fan**
Rated Heat Input		*Physical Size*	
Manufacturer		*Operator ID*	H-510B
Model		*Serial Number*	
Location Note			
Device Description	Part of VRU		

1.4.5 VRU Condensate Pump

Device ID #	**109483**	***Device Name***	**VRU Condensate Pump**
Rated Heat Input		*Physical Size*	0.50 Horsepower (Electric Motor)
Manufacturer		*Operator ID*	P-525A
Model		*Serial Number*	
Location Note			
Device Description	Part of VRU		

1.4.6 VRU Condensate Pump

Device ID #	**109484**	***Device Name***	**VRU Condensate Pump**
Rated Heat Input		*Physical Size*	0.50 Horsepower (Electric Motor)
Manufacturer		*Operator ID*	P-525B
Model		*Serial Number*	
Location Note			
Device Description	Part of VRU		

1.4.7 Vapor Recovery Inlet Separator

Device ID #	**109495**	***Device Name***	**Vapor Recovery Inlet Separator**
Rated Heat Input		*Physical Size*	
Manufacturer		*Operator ID*	V-500
Model		*Serial Number*	
Location Note			
Device Description	1' DIA x 5' Shell; 100 psig @ 200F; part of VRU		

1.4.8 Vapor Recovery Discharge Scrubber

Device ID #	**109496**	***Device Name***	**Vapor Recovery Discharge Scrubber**
Rated Heat Input		*Physical Size*	
Manufacturer		*Operator ID*	V-505
Model		*Serial Number*	
Location Note			
Device Description	1' DIA x 5' Shell; 100 psig @ 200F; part of VRU		

1.5 Miscellaneous Process Devices - Phase 1

1.5.1 Produced Gas Shell & Tube Heat Exchanger

Device ID #	**109462**	***Device Name***	**Produced Gas Shell & Tube Heat Exchanger**
Rated Heat Input		*Physical Size*	
Manufacturer	Ohmstede	*Operator ID*	H-305
Model		*Serial Number*	
Location Note			
Device Description			

1.5.2 HP Relief Condensate Pump

Device ID #	**109465**	***Device Name***	**HP Relief Condensate Pump**
Rated Heat Input		*Physical Size*	5.00 Horsepower (Electric Motor)
Manufacturer	Tuthill	*Operator ID*	P-345
Model	GG 50	*Serial Number*	G15514
Location Note			
Device Description	38 gpm @ 60 ft TDH, 2" line, driver RPM = 1150		

1.5.3 Folsom N Well Manifold Pump

Device ID #	**109466**	***Device Name***	**Folsom N Well Manifold Pump**
Rated Heat Input		*Physical Size*	40.00 Horsepower (Electric Motor)
Manufacturer	Goulds	*Operator ID*	P-250A
Model	3196MTX	*Serial Number*	727F461 1W3
Location Note			
Device Description	320 gpm @ 160 TDH, size: 3X4-13, driver rpm = 3500		

1.5.4 Folsom N Well Manifold Pump

Device ID #	**109467**	***Device Name***	**Folsom N Well Manifold Pump**
Rated Heat Input		*Physical Size*	40.00 Horsepower (Electric Motor)
Manufacturer	Goulds	*Operator ID*	P-250B
Model	3196MTX	*Serial Number*	727F462 1W3
Location Note			
Device Description	320 gpm @ 160 TDH, size: 3X4-13, driver rpm = 3500		

1.5.5 Oil Tank Battery Sump Pump

Device ID #	**109470**	***Device Name***	**Oil Tank Battery Sump Pump**
Rated Heat Input		*Physical Size*	2.00 Horsepower (Electric Motor)
Manufacturer	Stancor	*Operator ID*	P-280
Model	SSD-200	*Serial Number*	
Location Note			
Device Description	Line size: 2"; 40 gpm@ 50' TDH; driver = 3600 rpm		

1.5.6 Produced Water Transfer Pump

Device ID #	**109471**	***Device Name***	**Produced Water Transfer Pump**
Rated Heat Input		*Physical Size*	20.00 Horsepower (Electric Motor)
Manufacturer	Goulds	*Operator ID*	P-335A
Model	3196MTX	*Serial Number*	727F460 1W3
Location Note			
Device Description	320 gpm @ 160 ft TDH, size: 1-1/2x3-10, driver rpm = 3500		

1.5.7 Produced Water Transfer Pump

Device ID #	**109474**	***Device Name***	**Produced Water Transfer Pump**
Rated Heat Input		*Physical Size*	20.00 Horsepower (Electric Motor)
Manufacturer	Goulds	*Operator ID*	P-335B
Model	3196MTX	*Serial Number*	727F460 2W3
Location Note			
Device Description	320 gpm @ 160 ft TDH, size: 1-1/2x3-10, driver rpm = 3500		

1.5.8 Reject Tank Pump

Device ID #	**109476**	***Device Name***	**Reject Tank Pump**
Rated Heat Input		*Physical Size*	10.00 Horsepower (Electric Motor)
Manufacturer	Tuthill	*Operator ID*	P-365A
Model	GG 120	*Serial Number*	G10751
Location Note			
Device Description	116 gpm@60 ft TDH; 3" line; driver rpm = 1750		

1.5.9 Reject Tank Pump

Device ID #	**109477**	***Device Name***	**Reject Tank Pump**
Rated Heat Input		*Physical Size*	10.00 Horsepower (Electric Motor)
Manufacturer	Tuthill	*Operator ID*	P-365B
Model	GG 120	*Serial Number*	G10758
Location Note			
Device Description	116 gpm@60 ft TDH; 3" line; driver rpm = 1750		

1.5.10 H2S Removal Vessel Drain

Device ID #	**109479**	***Device Name***	**H2S Removal Vessel Drain**
Rated Heat Input		*Physical Size*	20.00 Horsepower (Electric Motor)
Manufacturer	Goulds	*Operator ID*	P-385A
Model	3196STX	*Serial Number*	727F462 2W2
Location Note			
Device Description	200 gpm @ 180 ft TDH; 3x1-1/2-8 lines; driver rpm = 3500		

1.5.11 H2S Removal Vessel Drain Pump

Device ID #	**109480**	***Device Name***	**H2S Removal Vessel Drain Pump**
Rated Heat Input		*Physical Size*	20.00 Horsepower (Electric Motor)
Manufacturer	Goulds	*Operator ID*	P-385B
Model	3196STX	*Serial Number*	
Location Note			
Device Description	200 gpm @ 180 ft TDH; 3x1-1/2-8 lines; driver rpm = 3500		

1.5.12 Fuel Gas Scrubber

Device ID #	**109490**	***Device Name***	**Fuel Gas Scrubber**
Rated Heat Input		*Physical Size*	
Manufacturer	PCL Ind Services	*Operator ID*	V-115
Model		*Serial Number*	20159-01
Location Note			
Device Description	2' DIA x 7' Shell; 200 psig @ 200F		

1.5.13 Three Phase Separator

Device ID #	**109491**	***Device Name***	**Three Phase Separator**
Rated Heat Input		*Physical Size*	
Manufacturer	PCL Ind Services	*Operator ID*	V-300
Model		*Serial Number*	20165-02
Location Note			
Device Description	8' DIA x 32' Shell; 150 psig @ 550F		

1.5.14 Produced Gas Knockout Vessel

Device ID #	**109492**	***Device Name***	**Produced Gas Knockout Vessel**
Rated Heat Input		*Physical Size*	
Manufacturer	PCL Ind Services	*Operator ID*	V-315
Model		*Serial Number*	20159-03
Location Note			
Device Description	2.5' DIA x 10.0' Shell; 150 psig @ 540F		

1.5.15 H2S Removal Vessel

Device ID #	**109493**	***Device Name***	**H2S Removal Vessel**
Rated Heat Input		*Physical Size*	
Manufacturer	PCL Ind Services	*Operator ID*	V-380A
Model		*Serial Number*	20162-01
Location Note			
Device Description	12' DIA x 30' Shell; 150 psig @ 550F		

1.5.16 H2S Removal Vessel

Device ID #	**109494**	***Device Name***	**H2S Removal Vessel**
Rated Heat Input		*Physical Size*	
Manufacturer	PCL Ind Services	*Operator ID*	V-380B
Model		*Serial Number*	20162-02
Location Note			
Device Description	12' DIA x 30' Shell; 150 psig @ 550F		

1.5.17 Filming Amine Injection System

Device ID #	**109677**	***Device Name***	**Filming Amine Injection System**
Rated Heat Input		*Physical Size*	
Manufacturer		*Operator ID*	M-130
Model		*Serial Number*	
Location Note			
Device Description	100 gal chemical tank and metering pump		

1.5.18 Condensate Vessel - Low Point Drain

Device ID #	**109678**	***Device Name***	**Condensate Vessel - Low Point Drain**
Rated Heat Input		*Physical Size*	
Manufacturer		*Operator ID*	V-310
Model		*Serial Number*	
Location Note			
Device Description	1' dia x 3' shell; atm press		

1.5.19 Progauge AWT #1

Device ID #	**109679**	***Device Name***	**Progauge AWT #1**
Rated Heat Input		*Physical Size*	
Manufacturer	Progauge	*Operator ID*	V-400
Model		*Serial Number*	
Location Note			
Device Description	2' dia x 3' shell; 400 psig @ 400F		

1.5.20 Progauge AWT #2

Device ID #	**109680**	***Device Name***	**Progauge AWT #2**
Rated Heat Input		*Physical Size*	
Manufacturer	Progauge	*Operator ID*	V-405
Model		*Serial Number*	
Location Note			
Device Description	2' dia x 3' shell; 400 psig @ 400F		

1.6 Lease Automatic Custody Transfer - Phase 1

1.6.1 LACT Charge Pump

Device ID #	**109472**	***Device Name***	**LACT Charge Pump**
Rated Heat Input		*Physical Size*	20.00 Horsepower (Electric Motor)
Manufacturer		*Operator ID*	P-361A
Model		*Serial Number*	
Location Note			
Device Description	110 gpm@50 ft TDH, size: 2x2, driver rpm = 1750, part of LACT		

1.6.2 Sample Pump

Device ID #	**109473**	***Device Name***	**Sample Pump**
Rated Heat Input		*Physical Size*	1.50 Horsepower (Electric Motor)
Manufacturer		*Operator ID*	P-368
Model		*Serial Number*	
Location Note			
Device Description	line size: 0.5"; 12 gpm@60 psi; part of LACT Unit		

1.6.3 LACT Charge Pump

Device ID #	**109475**	***Device Name***	**LACT Charge Pump**
Rated Heat Input		*Physical Size*	20.00 Horsepower (Electric Motor)
Manufacturer		*Operator ID*	P-361B
Model		*Serial Number*	
Location Note			
Device Description	110 gpm@50 ft TDH, size 2x2" line, driver rpm = 1750, part of LACT		

1.6.4 Oil Pan Drain Pump

Device ID #	**109478**	***Device Name***	**Oil Pan Drain Pump**
Rated Heat Input		*Physical Size*	1.50 Horsepower (Electric Motor)
Manufacturer		*Operator ID*	P-369
Model		*Serial Number*	
Location Note			
Device Description	Line size = 1"; 12 gpm@60 psig; part of LACT Unit		

1.7 Vibratory Shear Enhanced Processing (VSEP) - Phase 1

B EXEMPT EQUIPMENT

1 Feed Water Heat Exchanger

Device ID #	**109500**	***Device Name***	**Feed Water Heat Exchanger**
Rated Heat Input		*Physical Size*	
Manufacturer		*Operator ID*	H-120
Model		*Serial Number*	
Part 70 Insig?	No	*APCD Rule Exemption:*	
Location Note			
Device Description	Part of Steam Generator (water conditioning system) preheats feed water using steam condensate.		

2 RO Feed Cooling Fin Fan

Device ID #	**109501**	***Device Name***	**RO Feed Cooling Fin Fan**
Rated Heat Input		*Physical Size*	
Manufacturer	GEA Rainey	*Operator ID*	H-245
Model	1-1030T108	*Serial Number*	
Part 70 Insig?	No	*APCD Rule Exemption:*	
Location Note			
Device Description	Part of VSEP (water conditioning system)		

3 High Pressure Feed Water Pump

Device ID #	**109502**	***Device Name***	**High Pressure Feed Water Pump**
Rated Heat Input		*Physical Size*	
Manufacturer	Wheatley	*Operator ID*	P-100
Model	Q4240	*Serial Number*	
Part 70 Insig?	No	*APCD Rule Exemption:*	
Location Note			
Device Description	Part of Steam Generator water conditioning system		

4 Supply Water Pump

Device ID #	**109503**	***Device Name***	**Supply Water Pump**
Rated Heat Input		*Physical Size*	30.00 Horsepower (Electric Motor)
Manufacturer	Goulds	*Operator ID*	P-200A
Model	3196MTX	*Serial Number*	727F464 1W3
Part 70 Insig?	No	*APCD Rule Exemption:*	
Location Note			
Device Description	Part of VSEP (water conditioning system)		

5 Supply Water Pump

Device ID #	**109504**	***Device Name***	**Supply Water Pump**
Rated Heat Input		*Physical Size*	30.00 Horsepower (Electric Motor)
Manufacturer	Goulds	*Operator ID*	P-200B
Model	3196MTX	*Serial Number*	727F434 2W3
Part 70 Insig?	No	*APCD Rule Exemption:*	
Location Note			
Device Description	Part of VSEP (water conditioning system)		

6 Reject Water Pump

Device ID #	**109505**	***Device Name***	**Reject Water Pump**
Rated Heat Input		*Physical Size*	40.00 Horsepower (Electric Motor)
Manufacturer	Goulds	*Operator ID*	P-225A
Model	3196MTX	*Serial Number*	727F462 2W3
Part 70 Insig?	No	*APCD Rule Exemption:*	
Location Note			
Device Description	Part of VSEP (water conditioning system)		

7 Reject Water Pump

Device ID #	**109506**	***Device Name***	**Reject Water Pump**
Rated Heat Input		*Physical Size*	40.00 Horsepower (Electric Motor)
Manufacturer	Goulds	*Operator ID*	P-225B
Model	3196MTX	*Serial Number*	727F465 2W3
Part 70 Insig?	No	*APCD Rule Exemption:*	
Location Note			
Device Description	Part of VSEP (water conditioning system)		

8 Feed Water Transfer Pump

Device ID #	**109507**	***Device Name***	**Feed Water Transfer Pump**
Rated Heat Input		*Physical Size*	40.00 Horsepower (Electric Motor)
Manufacturer	Goulds	*Operator ID*	P-235A
Model	3196MTX	*Serial Number*	727F464 2W2
Part 70 Insig?	No	*APCD Rule Exemption:*	
Location Note			
Device Description	Part of VSEP (water conditioning system)		

9 Feed Water Transfer Pump

Device ID #	**109508**	***Device Name***	**Feed Water Transfer Pump**
Rated Heat Input		*Physical Size*	40.00 Horsepower (Electric Motor)
Manufacturer	Goulds	*Operator ID*	P-235B
Model	3196MTX	*Serial Number*	727F463 1W3
Part 70 Insig?	No	*APCD Rule Exemption:*	
Location Note			
Device Description	Part of VSEP (water conditioning system)		

10 Supply Water Tank

Device ID #	**109510**	***Device Name***	**Supply Water Tank**
Rated Heat Input		*Physical Size*	6850.00 BBL
Manufacturer	United Ind Group	*Operator ID*	T-210
Model		*Serial Number*	150615
Part 70 Insig?	No	*APCD Rule Exemption:*	
Location Note			
Device Description	Part of VSEP (water conditioning system); 35' DIA x 40' HIGH		

11 Intermediate Tank

Device ID #	**109511**	***Device Name***	**Intermediate Tank**
Rated Heat Input		*Physical Size*	450.00 BBL
Manufacturer	United Ind Group	*Operator ID*	T-215
Model		*Serial Number*	150620
Part 70 Insig?	No	*APCD Rule Exemption:*	
Location Note			
Device Description	Part of VSEP (water conditioning system); 12' 8"DIA x 20' HIGH		

12 Reject Water Holding Tank

Device ID #	**109512**	***Device Name***	**Reject Water Holding Tank**
Rated Heat Input		*Physical Size*	1340.00 BBL
Manufacturer	United Ind Group	*Operator ID*	T-220
Model		*Serial Number*	150618
Part 70 Insig?	No	*APCD Rule Exemption:*	
Location Note			
Device Description	Part of VSEP (water conditioning system); 20' DIA x 24' HIGH		

13 Feed Water Storage Tank

Device ID #	**109513**	***Device Name***	**Feed Water Storage Tank**
Rated Heat Input		*Physical Size*	6850.00 BBL
Manufacturer	United Ind Group	*Operator ID*	T-230
Model		*Serial Number*	150616
Part 70 Insig?	No	*APCD Rule Exemption:*	
Location Note			
Device Description	Part of VSEP (water conditioning system); 35' DIA x 40' HIGH		

14 Steam Separator

Device ID #	**109509**	***Device Name***	**Steam Separator**
Rated Heat Input		*Physical Size*	
Manufacturer	BYIS manuf	*Operator ID*	V-125
Model		*Serial Number*	
Part 70 Insig?	No	*APCD Rule Exemption:*	
Location Note			
Device Description			

15 Steam Sample Cooler

Device ID #	**109514**	***Device Name***	**Steam Sample Cooler**
Rated Heat Input		*Physical Size*	
Manufacturer		*Operator ID*	H-101
Model		*Serial Number*	
Part 70 Insig?	No	*APCD Rule Exemption:*	
Location Note			
Device Description			

16 Steam Sample Cooler

Device ID #	**109515**	***Device Name***	**Steam Sample Cooler**
Rated Heat Input		*Physical Size*	
Manufacturer		*Operator ID*	H-102
Model		*Serial Number*	
Part 70 Insig?	No	*APCD Rule Exemption:*	
Location Note			
Device Description			

Santa Barbara County
Air Pollution Control District

PERMIT EVALUATION for
PERMIT TO OPERATE 12084
AND
PART 70 MINOR PERMIT MODIFICATION 12084

1.0 BACKGROUND

1.1 General: The Diatomite Project is a steam enhanced oil recovery project located at the Newlove Lease on the Orcutt Hill production field in Northern Santa Barbara County. Construction on this project was authorized by Authority to Construct 12084 (issued final on June 5, 2007). The Source Compliance Demonstration Period (SCDP) for Phase 1 of this project was started on November 30, 2007. An application was received from BreitBurn Energy Company on May 14, 2008 for both an ATC-Modification and a Permit to Operate (PTO). The applications were deemed complete on June 13, 2008. The ATC-Mod changes have been directly incorporated into this PTO. The changes consist of a substantial decrease in Phase 1 component counts, corrections to wastewater tank T-330 dimensions and emissions, a change in service of PSV H-305B to oil service, and corresponding changes in the stationary source NEI.

As described in the Permit Evaluation of ATC 12084, the Diatomite Project is to be constructed in two phases. Phase 1 has been completed, and consists of one new 62.5 MMBTU/hr gas fired steam generator, one existing 23 MMBTU/hr gas fired steam generator, two well pods (containing a maximum total of 32 wells), a new tank battery, and a new water polishing system. (Note: The 23 MMBTU/hr steam generator was permitted under APCD ATC/PTO and Part 70 Minor Permit Modification 11405-02 issued August 27, 2007). As proposed, Phase 2 will consist of two new 62.5 MMBTU/hr gas fired steam generators, four well pods (containing a maximum total of 64 wells), and a new tank battery. Project equipment in both phases also includes fugitive components, hydrogen sulfide scrubbers and oil pipelines.

Fugitive hydrocarbon component counts, and the resultant ROC emissions for this project, both Phase 1 and Phase 2, are calculated using the Correlation Equation method. See Sec. 1.3.3 below for more details.

1.2 Permit History: The permitting history for the Newlove Lease facility may be found in PTO 8240-R6. Since the issuance of ATC 12084, the following permits have been issued for the Newlove Lease facility:

- ATC/PTO 11405-02 and Part 70 Minor Permit Modification 11405-02 (issued August 27, 2007) modified the NOx for concentration emission limit on the 23 MMBtu/hr steam generator from 14 ppmvd at 3% O2 to 9 and the ROC concentration from 13 ppmvd at 3%

O2 to 8.5 ppmvd at 3% O2. The sulfur content of PUC quality gas burned was also modified from 150 ppmv to 23 ppmv, and adjustments were made to the PM/PM10 emission factors;

- PTO 12354 (issued January 10, 2008) authorized the replacement of a 1000 bbl wastewater tank;
- PTO 12273 (issued April 21, 2008) authorized the replacement of a 3000 bbl wash tank.

1.3 Compliance History: The Diatomite Project is located on the Newlove Lease facility of the Orcutt Hill Stationary Source. The compliance history of the Newlove Lease facility may be found in PTO 8240-R6. Phase 1 compliance with permit condition requirements during the SCDP follows:

1.3.1 Plan Requirements. The following Plans required by ATC 12084 were reviewed and approved by the APCD:

- Source Test Plan – approved October 25, 2007;
- Fugitive Hycrocarbon Inspection & Maintenance Plan – approved November 21, 2007;
- Fuel Use Monitoring Plan – approved November 2, 2007;
- Process Monitor Calibration and Maintenance Plan – approved November 16, 2007;
- Equipment List and Drawings – equipment lists and drawings are on file at APCD's Santa Barbara office.

Note: A Degassing Plan was not required per Rule 343 since TVP sample results were below the applicability threshold of 2.6 psia.

1.3.2 Steam Generator. Source testing of the 62.5 MMBtu/hr steam generator (completed on January 24, 2008) showed the unit operating within the concentration and mass emissions limits of ATC 12084.

Additional source testing to determine ROC destruction efficiency at radiant heat zone temperatures less than the 1400 deg F limit in ATC 12084 was performed on October 9, 2008. Test results showed that 90% or better ROC destruction efficiency was achieved with 3-run average temperatures of 1275 and 1293 deg F in the radiant heat zone; this information was considered in reducing this minimum temperature Condition 9.C.2.d. from 1400 deg. F to 1275 deg. F.

1.3.3 Fugitive Hydrocarbon Components. During the Source Compliance Demonstration (SCDP) period of ATC 12084, the APCD verified BreitBurn's component count methodology and count, witnessed BreitBurn's component monitoring procedures, and reviewed I&M records submitted for the first two months of operation (December 2007 and January 2008). Based on this information, the APCD found that BreitBurn met the recordkeeping and reporting requirements of ATC 12084, and satisfied the requirements of the Fugitive Emissions Inspection & Maintenance Plan (submitted and approved November 21, 2007) which incorporates both APCD Rule 331 (Fugitive Emissions Inspection and Maintenance) and Policy and Procedure 6100.072.1998 ("Using Correlation Equation

Methodology to Estimate Mass ROC Emissions at O&G Facilities") requirements. Fugitive ROC emissions are well within permitted limits.

It should be noted that there was a significant drop in the number of fugitive hydrocarbon components permitted by ATC 12084 (estimated by BreitBurn from construction drawings) compared with the verified field count: components included in ATC 12084 total 9853 components, and the as-built Phase 1 components included in PTO 12084 total 5763 components.
To accommodate SCDP start dates in ATC 12084, fugitive ROC mass emissions limits in that permit were based on consecutive 90-day periods. These limits in PTO 12084 are now based on calendar quarter time periods.

During the SCDP, BreitBurn installed 155 pipeline components to allow Orcutt Hill Field produced gas to be blended with the PUC quality gas for the main burners of the steam generator. These components are included in the 5763 component total of PTO 12084. No additional equipment was added.

2.0 ENGINEERING ANALYSIS

2.1 Equipment/Processes: Steaming has historically been utilized at Orcutt Hill as a recovery technique but had not been used since the mid-1980's. The goal of the Diatomite Project is to enhance existing oil recovery in the Orcutt Hill Field using down-hole steam injection. Steam is injected into the oil bearing reservoir, reducing the viscosity of the oil and enhancing its recoverability.

The Diatomite Project is to be constructed in two phases. The first phase (Phase 1) covered under this permit installed one 62.5 MMBtu/hr Steam Generator, two well pods, a tank farm, and a water polishing system. The peak projected production rates are 1500 BOPD of crude oil for Phase 1 and 3000 BOPD of crude oil for the entire project (Phases 1 and 2) and a maximum of 340 mscfd of produced gas for Phase 1 and 1020 mscfd of produced gas for the entire project (Phases 1 and 2). All proposed project equipment may be operated 24 hours a day, 365 days a year.

Well steaming will consist of injecting steam into several wells in each pod for three to five days. The steam will then be allowed to "soak" in the wells for one to two days before the wells are returned to production. While the first wells are soaking, steam injection will be moved to the next set of wells in the pod. This process will continue until all wells in the pod have been steamed, after which the cycle will be repeated. Each well will undergo cyclic steam injection. All water used for steam generation will be obtained from onsite sources and treated prior to being introduced into the generators.

Gas burned in the steam generator is PUC-quality gas, from either the PUC utility line, produced gas from Orcutt Hill (aka "Orcutt Hill field gas"), or a combination of these gases. Produced gas from the Diatomite field burned in the third ring of the burner is also PUC-quality gas. It is

anticipated that Diatomite project produced field gas could contribute a maximum of 15 % of the energy input to any of the 62.5 MMBTU/hr steam generators.

During construction of Phase 1, BreitBurn applied for and received an Authority to Construct modification (ATC 12084 Mod -01) authorizing Orcutt Hill Field produced gas to be blended with PUC-quality gas. The Orcutt Hill Field produced gas, as well as Diatomite Project produced gas, must be treated for H2S by a SulfaTreat system designed to removed 99.9% of the H2S. The anticipated maximum H_2S concentration of the produced gas is 20,000 ppm H_2S. The PUC gas and the PUC/Orcutt Hill Field produced gas blend must meet PUC-quality standards, and all fuel gas combusted in the steam generator burner (PUC gas, Diatomite Project produced gas, and the PUC/Orcutt Hill Field produced gas blend) is required under this permit to have a sulfur content of less than 23 ppmvd.

BreitBurn has received Permit to Operate (PTO) 11405-01 to operate a 23 MMBtu steam generator that has been used to test three existing wells. This existing steam generator is being used as part of the Diatomite Project, and is subject to NSR requirements applicable to this project.

2.2 Emission Controls: The following is a summary of the emission controls at this facility:

a. The steam generator is equipped with ultra low-NO_X burners, automatic excess O_2 trim controllers and exhaust gas recirculation. The steam generator emissions (at standard conditions and corrected to 3% O_2) is be limited to 9 ppmv of NO_X, 8.5 ppmv of ROC and 27 ppmv of CO. The NO_X and ROC limits represent BACT. The CO limit is based on BreitBurn Energy's application. These limits have been verified through source testing.

b. The steamed wells will not be "blown down" to atmosphere. The produced steam, gas and oil are routed to the production gathering system. The wells do not have cellars.

c. Low emitting design components to reduce emission of fugitive hydrocarbons. An enhanced fugitive hydrocarbon inspection and maintenance program (monthly monitoring with BACT level leak detection and repair triggers). This is expected to control emissions in excess of APCD Rule 331 requirements and to maintain fugitive ROC emission limits under permitted limits (based on APCD Policy and Procedure 6100.072.1998).

d. The storage tanks will be connected to a vapor recovery system. A 95-percent control efficiency is applied for the use of vapor recovery. The vapors will be sent to the steam generators for destruction.

e. A SulfaTreat System will serve as the primary emission control for the H_2S concentrations in the produced gas, and in the Orcutt Hill Field produced gas to be blended with PUC gas. The highest expected H_2S concentration in untreated production gas is 20,000 ppm_v. The maximum anticipated volume of produced gas from this project and that which is required to

be treated by this system is 1050 Mscfd. Permittee submitted final design specifications and operating parameters.

f. Based on engineering analyses, the ATC required that each steam generator maintain a combustion section temperature at a minimum of 1400 deg F and operate at a combustion residence time of no less than 4.88 seconds to provide greater than 90% percent destruction of produced gas in order to meet Rule 325.E. requirements. A destruction efficiency of greater than 99% was demonstrated during SCDP. Under this PTO the minimum temperature requirement has been lowered to 1275 deg F based on additional source testing performed on January 24, 2008.

2.3 Emission Factors: Emission factors for each equipment item are documented in the attached emission calculation tables.

The following is documentation of the steam generator emissions in parts per million:

$EF = (2.634 \times 10^{-9})$ (ppmvd) (MW) (F factor)

Therefore:

ppmvd = EF / (2.634×10^{-9}) (F factor) (MW)

Where:

$(2.634 \times 10^{-9}) = (1 \text{ lb-mole} / 379 \text{ ft}^3) (1 / 1{,}000{,}000)$

F factor = Stack flow at 3% O_2 = 10,051 dscf/MMBtu at 3% O_2

MW NO_X	= 46.01 lb/lb-mole
MW ROC	= 16 lb/lb-mole
MW CO	= 28 lb/lb-mole

NO_X Emission Factor =	0.0110 lb/MMBtu	(Source: BACT Limit)
ROC Emission Factor =	0.0040 lb/MMBtu	(Source: BACT Limit)
CO Emission Factor =	0.0190 lb/MMBtu	(Source: BreitBurn Energy application)

Calculated ppm limits:

NO_X =	9 ppmvd
ROC =	8.5 ppmvd
CO =	27 ppmvd

The following is documentation of the fugitive component emissions:

The calculation methodology for the fugitive hydrocarbon emissions is detailed in Table 3 of this permit. All fugitive hydrocarbon components are monitored by BreitBurn Energy on a monthly basis. The leak rates from the monitoring are separated into two leak rate groups, "<10K" and "≥10K". Each component is then assigned the THC leak rate from Table SVRF-2 in APCD P&P 6100.072.1998 corresponding to service type (gas/light liquid or oil) component type (e.g. valve, flange, connector, PRD, pump/compressor seal, other). ROC/THC ratios are assigned to each component from APCD Policy and Procedure 6100.061.1998 *Determination of Fugitive Hydrocarbon Emissions at Oil and Gas Facilities Through the Use of Facility Component Counts.*

2.4 Reasonable Worst Case Emission Scenario: Worst case emissions are based on operation of this facility 24 hours/day, 365 days per year at maximum permitted throughput levels.

2.5 Emission Calculations: Detailed emission calculation spreadsheets may be found in Attachment "A". These emissions define the Potential to Emit for the permitted equipment.

2.6 Special Calculations: To ensure ROC destruction efficiency greater than 90 percent, the steam generator radiant section temperature must not be less than 1275 deg F and the residence time within the steam generator not less than 4.88 seconds. Interior volume of the steam generator shall be calculated using nominal dimensions and the exhaust flow shall be the volumetric flow under actual conditions on a wet basis. Residence time is calculated as follows:

Residence time (sec) = V (interior volume of steam generator, ft^3) / Q (exhaust flow, acf/sec)

2.7 BACT Analyses: Best Available Control Technology is required for this project because the uncontrolled NO_x and ROC Project Potential to Emit emissions from this project exceed the 25 lb/day criteria pollutant threshold for BACT. Compliance with BACT for Phase I was confirmed during the SCDP. FGR controls on the existing 23 MMBtu/hr steam generator were previously determined through APCD observed source testing to comply with the BACT NOx limit of 9 ppmv (@3%O2). See Table 7 of the permit for BACT requirements of this project.

2.8 Enforceable Operational Limits: The permit has enforceable operating conditions that ensure the control devices are operated properly.

2.9 Monitoring Requirements: Monitoring of the equipment's operational limits are required to ensure that these are enforceable. This permit requires monitoring the volume of oil produced, the volume of gas burned in the steam generators, and the volume of solvents used, and the parameters required by APCD Rules 325.F, 331.G, and 344.G. Steam generator fuel gas sulfur content samples are taken from a point immediately downstream of the 2" 150 psi mixing point prior to combustion in the steam generator. (See Esys Figure 2 dated 5/5/08 submitted by BreitBurn on May 23, 2008 in

APCD's project files).

2.10 Recordkeeping and Reporting Requirements: The permit requires that the data which is monitored be recorded and reported to the APCD.

3.0 REEVALUATION REVIEW (not applicable)

4.0 REGULATORY REVIEW

4.1 Partial List of Applicable Rules: This project is anticipated to operate in compliance with the following rules:

Rule 101. Compliance of Existing Facilities
Rule 202. Exemptions to Rule 201
Rule 205. Standards for Granting Permits
Rule 302. Visible Emissions
Rule 303. Nuisance
Rule 309. Specific Contaminants
Rule 310. Odorous Organic Sulfides
Rule 311. Sulfur Content of Fuels
Rule 324. Disposal and Evaporation of Solvents
Rule 325. Crude Oil Production and Separation
Rule 326. Storage of Reactive Organic Compound Liquids
Rule 331. Fugitive Emissions Inspection and Maintenance
Rule 342. Control of Oxides of Nitrogen from Boilers, Steam Generators, and Process Heaters
Rule 343. Petroleum Storage Tank Degassing
Rule 344. Sumps, Pits and Well Cellars
Rule 353. Adhesives and Sealants
Rule 359. Flares and Thermal Oxidizers
Rule 505. Breakdown Procedures
Rule 801. New Source Review
Rule 802. Nonattainment Review
Rule 803. Prevention of Significant Deterioration

4.2 Rules Requiring Review: **Oil and Gas MACT: 40 CFR 63, Subpart HH**

The Diatomite Project is located at the Newlove Lease at Orcutt Hill. The District issued a March 27, 2002 letter to the prior lease operator acknowledging that the facility did not qualify as a "major source" as defined in 40CFR63.761 and therefore is exempt from the MACT requirements. In addition, the District has verified that the Diatomite Project Phase 1 does not meet the MACT

definition of a natural gas processing plant, and does not contain a glycol dehydration unit or storage vessel with potential for flash emissions. (Recent API gravity results indicated no flash potential based on sampling at two tanks: Tank T-350 on April 11, 2008: 13.3 API; at Tank T-340 on April 23, 2008: 14.6 API.)
Therefore the Diatomite Project Phase 1 is not an affected source per 40CFR63.760 (b), and the requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAPS) for Oil and Natural Gas Production and Natural Gas Transmission and Storage (promulgated June 17, 1999) do not apply. The District will evaluate the MACT applicability for Phase 2 of the project if that phase is pursued by BreitBurn.

4.3 NEI Calculations: This is a new project and all permitted emissions are included in the stationary source net emissions increase (NEI). The stationary source net emission increase calculation is used to determine whether certain requirements must be applied to a project (e.g., offsets, AQIA, PSD BACT). Refer to NEI tables in Attachment C for the stationary source NEI total.

Notes:
1) When Phase 2 is accounted for, the total stationary source NEI for NO_x and ROC exceed the 55 pound per day threshold for requiring emission offsets. See Section 6.0 below for additional discussion.
2) See PTO 12273 (Newlove Lease) Section 4.3 of the Permit Evaluation for details on determining offsets at the stationary source for future permitting actions prior to the beginning of Phase 2 construction.

5.0 AQIA

The project is not subject to the Air Quality Impact Analysis requirements of Regulation VIII.

6.0 OFFSETS/ERCs

6.1 General: The Regulation VIII emission offset thresholds for NO_x and ROC are exceeded for the Diatomite Project based on the stationary source net emission increase including Phase 1 and 2 emissions of this project. It should be noted that if the source NEI was calculated with emissions from Phase 1 project components only, offsets would not be triggered. Thus, flexibility was granted in the ATC permit to defer fulfillment of offset requirements until Phase 2 is pursued. Thus, this PTO does not contain any offset requirements.

6.2 Offsets: BreitBurn is required to provide offsets for the net emission increase at least two weeks prior to the onset of construction of Phase 2 of the project. BreitBurn shall offset the maximum quarterly NO_x and ROC net emissions increase by reducing emissions at existing sources. Offset requirements for new projects at the Orcutt Hill stationary source prior to Phase 2 construction will be evaluated by excluding the Phase 2 contribution from the NEI total.

6.3 ERCs: The APCD has issued DOI # 0046 to create emission reduction credits from electrification of 17 water injection engines operated at the Orcutt Hill stationary source. BreitBurn possesses ERCs under DOI #0038 that were generated by controlling the Fox Injection Engine on the Orcutt Hill Field.

7.0 AIR TOXICS

An air toxics health risk assessment (HRA) was prepared by the applicant for the entire stationary source, and submitted as part of the permit application. The APCD review indicated that Diatomite Project's contribution to the total calculated stationary source cancer and non-cancer health risk was negligible. Further analysis of the Orcutt Hill stationary source risk and any required risk reduction measures will be assessed in accordance with AB2588 requirements.

8.0 CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) REVIEW

The County of Santa Barbara as Lead Agency approved Negative Declaration 06NGD-00000-00018 on November 8, 2006. Final action on the ATC permit was taken only after review and consideration by the Control Officer, or authorized APCD representative of the Control Officer of the information in the Lead Agency's adopted final Negative Declaration. This PTO is exempt from CEQA based on Appendix A of the APCD CEQA Guidelines.

9.0 SCHOOL NOTIFICATION PROCESS

A school notice pursuant to the requirements of H&SC §42301.6 was not required.

10.0 PUBLIC and AGENCY NOTFICATION PROCESS/COMMENTS ON DRAFT PERMIT

The permittee submitted comments on the draft PTO on October 3, 2008; the comments and APCD responses are included in Attachment E.

11.0 FEE DETERMINATION

Fees for the APCD's work efforts are assessed on a fee basis. The Project Code is 300000 (*Oil & Gas*). The fee calculations may be found in Attachment E.

12.0 RECOMMENDATION

It is recommended that this permit be granted with the conditions as specified in the permit.

AQ Engineer	Date	Engineering Supervisor	Date

\\sbcapcd.org\Shares\Groups\ENGR\WP\PT70SRCE\PERMITS\O&G-PROD\Breitburn Orcutt\Diatomite Project\PTOs\DRAFTS\PTO 12084 for Ph 1\EPA\Proposed PTO12084 Pt70MnrMod DiatProj 1Dec08.doc

ATTACHMENTS

A Emission Calculations
B IDS Tables (facility/source)
C Facility and Stationary Source NEI
D Fee Calculation Documentation
E Response to Comments

ATTACHMENT A

Emission Calculations

BreitBurn Energy Company Diatomite Project

FIXED ROOF TANK CALCULATION (AP-42: Chapter 7 Method)

Basic Input Data	
liquid {1:G13, 2:G10, 3:G7, 4:C, 5:JP, 6:ker, 7:O2, 8:O6} =	4
liquid TVP =	1.8
if TVP is entered, enter TVP temperature (°F) =	200
tank heated {yes, no} =	no
if tank is heated, enter temp (°F) =	
vapor recovery system present? {yes, no} =	yes
is this a wash tank? {yes, no} =	no
will flashing losses occur in this tank? {yes, no} =	yes
breather vent pressure setting range (psi) (def = 0.06):	0.4

Permit: PTO 12084
Date: 08/22/08
Tank: Crude Tank
Name: Phase 1
Filename:
District: Santa Barbara
Version: Tank-2b.xls

PRINT

Tank Data		
diameter (feet) =		25
capacity (enter barrels in first col, gals will compute) =	2,100	88,200
conical or dome roof? {c, d} =		c
shell height (feet) =		24
roof height (def = 1):		2.5
ave liq height (feet):		12
color {1:Spec Al, 2:Diff Al, 3:Lite, 4:Med, 5:Rd, 6:Wh} =		4
condition {1: Good, 2: Poor} =		1
upstream pressure (psig) (def = 0 when no flashing occurs):		10

Liquid Data	A	B
maximum daily throughput (bopd) =		1,500
Ann thruput (gal): (enter value in Column A if not max PTE)		2.300E+07
RVP (psia):		0.317
°API gravity =		13.3

Computed Values		
roof outage [1] (feet):		0.8
vapor space volume [2] (cubic feet):		6,283
turnovers [3]:		260.71
turnover factor [4]:		0.28
paint factor [5]:		0.68
surface temperatures (°R, °F)		
average [6]:	527.2	67.2
maximum [7]:	539	79
minimum [8]:	515.4	55.4
product factor [9]:		0.75
diurnal vapor ranges		
temperature [10] (fahrenheit degrees):		47.2
vapor pressure [11] (psia):		0.060864
molecular weight [12] (lb/lb-mol):		50
TVP [13] (psia) [adjusted for ave liquid surface temp]:		0.08279
vapor density [14] (lb/cubic foot):		0.000732
vapor expansion factor [15]:		0.066
vapor saturation factor [16]:		0.946822
vented vapor volume (scf/bbl):		12
fraction ROG - flashing losses:		0.308
fraction ROG - evaporative losses:		0.885

Paint Factor Matrix	paint condition	
paint color	good	poor
spec alum	0.39	0.49
diff alum	0.60	0.68
lite grey	0.54	0.63
med grey	0.68	0.74
red	0.89	0.91
white	0.17	0.34

Molecular Weight Matrix	
liquid	mol wt
gas rvp 13	62
gas rvp 10	66
gas rvp 7	68
crude oil	50
JP-4	80
jet kerosene	130
fuel oil 2	130
fuel oil 6	190

Adjusted TVP Matrix	
liquid	TVP value
gas rvp 13	7.908
gas rvp 10	5.56
gas rvp 7	3.932
crude oil	0.08279
JP-4	1.516
jet kerosene	0.0103
fuel oil 2	0.009488
fuel oil 6	0.0000472

RVP Matrix	
liquid	RVP value
gas rvp 13	13
gas rvp 10	10
gas rvp 7	7
crude oil	0.245084594
JP-4	2.7
jet kerosen	0.029
fuel oil 2	0.022
fuel oil 6	0.00019

Long-Term
VRU_Eff = 95.00%

Short-Term
VRU_Eff = 95.00%

Emissions	Uncontrolled ROC emissions			Controlled ROC emissions		
	lb/hr	lb/day	ton/year	lb/hr	lb/day	ton/year
breathing loss [17] =	0.01	0.25	0.05	0.00	0.01	0.00
working loss [18] =	0.05	1.15	0.21	0.00	0.06	0.01
flashing loss [19] =	0.17	4.06	0.74	0.01	0.20	0.04
TOTALS =	0.23	5.47	1.00	0.0114	0.2733	0.0499

BreitBurn Energy Company Diatomite Project

FIXED ROOF TANK CALCULATION (AP-42: Chapter 7 Method)

Basic Input Data	
liquid {1:G13, 2:G10, 3:G7, 4:C, 5:JP, 6:ker, 7:O2, 8:O6} =	4
liquid TVP =	3
if TVP is entered, enter TVP temperature (°F) =	200
tank heated {yes, no} =	no
if tank is heated, enter temp (°F) =	
vapor recovery system present? {yes, no} =	yes
is this a wash tank? {yes, no} =	yes
will flashing losses occur in this tank? {yes, no} =	yes
breather vent pressure setting range (psi) (def = 0.06):	0.06

Permit: PTO 12084
Date: 08/22/08
Tank: Wash Tank
Name: Phase 1
Filename:
District: Santa Barbara
Version: Tank-2b.xls

PRINT

Tank Data		
diameter (feet) =		30
capacity (enter barrels in first col, gals will compute) =	5,480	230,160
conical or dome roof? {c, d} =		c
shell height (feet) =		32
roof height (def = 1):		1.5
ave liq height (feet):		31
color {1:Spec Al, 2:Diff Al, 3:Lite, 4:Med, 5:Rd, 6:Wh} =		4
condition {1: Good, 2: Poor} =		1
upstream pressure (psig) (def = 0 when no flashing occurs):		10

Liquid Data	A	B
maximum daily throughput (bopd) =		2,000
Ann thruput (gal): (enter value in Column A if not max PTE)		3.066E+07
RVP (psia):		0.317
°API gravity =		13.3

Computed Values		
roof outage [1] (feet):		0.5
vapor space volume [2] (cubic feet):		1,060
turnovers [3]:		133.21
turnover factor [4]:		0.39
paint factor [5]:		0.68
surface temperatures (°R, °F)		
average [6]:	527.2	67.2
maximum [7]:	539	79
minimum [8]:	515.4	55.4
product factor [9]:		0.75
diurnal vapor ranges		
temperature [10] (fahrenheit degrees):		47.2
vapor pressure [11] (psia):		0.060864
molecular weight [12] (lb/lb-mol):		50
TVP [13] (psia) [adjusted for ave liquid surface temp]:		0.08279
vapor density [14] (lb/cubic foot):		0.000732
vapor expansion factor [15]:		0.09
vapor saturation factor [16]:		0.993461
vented vapor volume (scf/bbl):		12
fraction ROG - flashing losses:		0.308
fraction ROG - evaporative losses:		0.885

Paint Factor Matrix	paint condition	
paint color	good	poor
spec alum	0.39	0.49
diff alum	0.60	0.68
lite grey	0.54	0.63
med grey	0.68	0.74
red	0.89	0.91
white	0.17	0.34

Molecular Weight Matrix	
liquid	mol wt
gas rvp 13	62
gas rvp 10	66
gas rvp 7	68
crude oil	50
JP-4	80
jet kerosene	130
fuel oil 2	130
fuel oil 6	190

Adjusted TVP Matrix	
liquid	TVP value
gas rvp 13	7.908
gas rvp 10	5.56
gas rvp 7	3.932
crude oil	0.08279
JP-4	1.516
jet kerosene	0.0103
fuel oil 2	0.009488
fuel oil 6	0.0000472

RVP Matrix	
liquid	RVP value
gas rvp 13	13
gas rvp 10	10
gas rvp 7	7
crude oil	0.439332
JP-4	2.7
jet kerosene	0.029
fuel oil 2	0.022
fuel oil 6	0.00019

Long-Term
VRU_Eff = 95.00%

Short-Term
VRU_Eff = 95.00%

Emissions	Uncontrolled ROC emissions			Controlled ROC emissions		
	lb/hr	lb/day	ton/year	lb/hr	lb/day	ton/year
breathing loss [17] =	0.00	0.06	0.01	0.00	0.00	0.00056
working loss [18] =	0.00	0.00	0.00	0.00	0.00	0.00000
flashing loss [19] =	0.23	5.41	0.99	0.01	0.27	0.04937
TOTALS =	**0.23**	**5.47**	**1.00**	**0.0114**	**0.2736**	**0.0499**

BreitBurn Energy Company Diatomite Project

FIXED ROOF TANK CALCULATION (AP-42: Chapter 7 Method)

Basic Input Data	
liquid {1:G13, 2:G10, 3:G7, 4:C, 5:JP, 6:ker, 7:O2, 8:O6} =	4
liquid TVP =	3
if TVP is entered, enter TVP temperature (°F) =	200
tank heated {yes, no} =	no
if tank is heated, enter temp (°F) =	
vapor recovery system present? {yes, no} =	yes
is this a wash tank? {yes, no} =	no
will flashing losses occur in this tank? {yes, no} =	yes
breather vent pressure setting range (psi) (def = 0.06):	0.4

Permit: PTO 12084
Date: 08/22/08
Tank: Reject Tank
Name: Phase 1
Filename:
District: Santa Barbara
Version: Tank-2b.xls

PRINT

Tank Data		
diameter (feet) =		25
capacity (enter barrels in first col, gals will compute) =	2,100	88,200
conical or dome roof? {c, d} =		c
shell height (feet) =		24
roof height (def = 1):		2.5
ave liq height (feet):		6
color {1:Spec Al, 2:Diff Al, 3:Lite, 4:Med, 5:Rd, 6:Wh} =		4
condition {1: Good, 2: Poor} =		1
upstream pressure (psig) (def = 0 when no flashing occurs):		10

Liquid Data	A	B
maximum daily throughput (bopd) =		1,500
Ann thruput (gal): (enter value in Column A if not max PTE)		2.300E+07
RVP (psia):		0.317
°API gravity =		13.3

Computed Values		
roof outage [1] (feet):		0.8
vapor space volume [2] (cubic feet):		9,228
turnovers [3]:		260.71
turnover factor [4]:		0.28
paint factor [5]:		0.68
surface temperatures (°R, °F)		
average [6]:	527.2	67.2
maximum [7]:	539	79
minimum [8]:	515.4	55.4
product factor [9]:		0.75
diurnal vapor ranges		
temperature [10] (fahrenheit degrees):		47.2
vapor pressure [11] (psia):		0.060864
molecular weight [12] (lb/lb-mol):		50
TVP [13] (psia) [adjusted for ave liquid surface temp]:		0.08279
vapor density [14] (lb/cubic foot):		0.000732
vapor expansion factor [15]:		0.066
vapor saturation factor [16]:		0.923794
vented vapor volume (scf/bbl):		12
fraction ROG - flashing losses:		0.308
fraction ROG - evaporative losses:		0.885

Paint Factor Matrix	paint condition	
paint color	good	poor
spec alum	0.39	0.49
diff alum	0.60	0.68
lite grey	0.54	0.63
med grey	0.68	0.74
red	0.89	0.91
white	0.17	0.34

Molecular Weight Matrix	
liquid	mol wt
gas rvp 13	62
gas rvp 10	66
gas rvp 7	68
crude oil	50
JP-4	80
jet kerosene	130
fuel oil 2	130
fuel oil 6	190

Adjusted TVP Matrix	
liquid	TVP value
gas rvp 13	7.908
gas rvp 10	5.56
gas rvp 7	3.932
crude oil	0.08279
JP-4	1.516
jet kerosene	0.0103
fuel oil 2	0.009488
fuel oil 6	0.0000472

RVP Matrix	
liquid	RVP value
gas rvp 13	13
gas rvp 10	10
gas rvp 7	7
crude oil	0.439332
JP-4	2.7
jet kerosene	0.029
fuel oil 2	0.022
fuel oil 6	0.00019

Long-Term
VRU_Eff = 95.00%

Short-Term
VRU_Eff = 95.00%

Emissions	Uncontrolled ROC emissions			Controlled ROC emissions		
	lb/hr	lb/day	ton/year	lb/hr	lb/day	ton/year
breathing loss [17] =	0.02	0.36	0.07	0.00	0.02	0.00
working loss [18] =	0.05	1.15	0.21	0.00	0.06	0.01
flashing loss [19] =	0.17	4.06	0.74	0.01	0.20	0.04
TOTALS =	**0.23**	**5.58**	**1.02**	**0.0116**	**0.2788**	**0.0509**

FUGITIVE HYDROCARBON CALCULATIONS - CARB/KVB METHOD

ADMINISTRATIVE INFORMATION

Company: BreitBurn Energy Company
Facility: Diatomite Project Tank Battery Future Produced WaterTank #2
Processed by: RDM
Date: June 2008 Note: Previously called Wastewater Tank

Version: fhc-kvb4.xls
Date: 8-Jun-06

Reference: CARB speciation profiles #s 529, 530, 531, 532

Data	Value	Units
Number of Active Wells at Facility	0	wells
Facility Gas Production	0	scf/day
Facility Dry Oil Production	0	bbls/day
Facility Gas to Oil Ratio (if > 500 then default to 501)	0	scf/bbl
API Gravity	0	degrees API
Facility Model Number	0	dimensionless
Steam Drive Wells with Control Vents	0	lb/day-well
Steam Drive Wells with Uncontrol Vents	0	lb/day-well
Cyclic Steam Drive Wells with Control Vents	0	lb/day-well
Cyclic Steam Drive Wells with Uncontrol Vents	0	lb/day-well
Composite Valve and Fitting Emission Factor	0.0000	lb/day-well

Lease Model	Valve ROG Emission Factor Without Ethane	Fitting ROG Emission Factor Without Ethane	Composite ROG Emission Factor Without Ethane	
1	**1.4921**	**0.9947**	**2.4868**	lbs/day-well
2	**0.6999**	**0.6092**	**1.3091**	lbs/day-well
3	**0.0217**	**0.0673**	**0.0890**	lbs/day-well
4	**4.5090**	**2.1319**	**6.6409**	lbs/day-well
5	**0.8628**	**1.9424**	**2.8053**	lbs/day-well
6	**1.7079**	**2.5006**	**4.2085**	lbs/day-well

Model #1: Number of wells on lease is less than 10 and the GOR is less than 500.
Model #2: Number of wells on lease is between 10 and 50 and the GOR is less than 500.
Model #3: Number of wells on lease is greater than 50 and the GOR is less than 500.
Model #4: Number of wells on lease is less than 10 and the GOR is greater than 500.
Model #5: Number of wells on lease is between 10 and 50 and the GOR is greater than 500.
Model #6: Number of wells on lease is greater than 50 and the GOR is greater than 500.

ROC Emission Calculation Summary Results Table
Reactive Organic Compounds[c]

	lbs/hr	lbs/day	tons/year
Valves and Fittings[a]	0.00	0.00	0.00
Sumps, Wastewater Tanks and Well Cellars[b]	0.01	0.21	0.04
Oil/Water Separators [b]	0.00	0.00	0.00
Pumps/Compressors/Well Heads[a]	0.00	0.00	0.00
Enhanced Oil Recovery Fields	0.00	0.00	0.00
Total Facility FHC Emissions (ROC)	**0.01**	**0.21**	**0.04**

a: Emissions amount reflect an 80% reduction due to Rule 331 implementation.
b: Emissions reflect control efficiencies where applicable.
c: Due to rounding, the totals may not appear correct

Emission Calculation by Emission Unit

Pumps, Compressors, and Well Heads Uncontrolled Emission Calculations

Number of Wells	0	wells
Wellhead emissions	0	ROC (lb/well-day)
FHC from Pumps	0	ROC (lb/well-day)
FHC from Compressors	0	ROC (lb/well-day)
Total:	0.0000	ROC (lb/well-day)

Sumps, Uncovered Wastewater Tanks, and Well Cellars

Efficiency Factor: (70% for well cellars, 0% for uncovered WW tanks, sumps and pits)

Unit Type/Emissions Factor

	Heavy Oil Service	Light Oil Service	
Primary	0.0941	0.138	(lb ROC/ft^2-day)
Secondary	0.0126	0.018	(lb ROC/ft^2-day)
Tertiary	0.0058	0.0087	(lb ROC/ft^2-day)

Surface Area and Type (emissions in lbs/day)

Description/Name	Number	Area (ft^2)	Primary	Secondary	Tertiary
Well Cellars[(a)]		0.0	0.00		
				0.00	
Sump		0			0.00
(a) A 70% reduction is applied for implementation of Rule 344 (*Sumps, Pits, and Well Cellars*).			0.00	0.00	0.00
				0	

Covered Wastewater Tanks

0

Efficiency Factor: 85%

Surface Area and Type (emissions in lbs/day)

Description/Name	Number	Area (ft^2)	Primary	Secondary	Tertiary
			0.00		
Watewater Tank		0.00		0.00	
					0.00
			0.00	0.00	0.00

Covered Wastewater Tanks Equipped with Vapor Recovery

Efficiency Factor: 95%

Surface Area and Type (emissions in lbs/day)

Description/Name	Number	Area (ft^2)	Primary	Secondary	Tertiary
			0.00		
Produced Water Tank		0.00	0.00	0.000	
		490.87			0.21
			0.00	0.000	0.2135

Oil/Water Separators

Efficiency Factor: varies (85% for cover, 95% for VRS, 0% for open top)

Emissions Factor: 560 (lb ROC/MM Gal)

		Type (emissions in lbs/day)			Total
Description/Name	TP-MM Gal	Equipped with Cover	Equipped with VRS	Open Top	lb/day
Wemco	0			0.0	
		0.0	0.0	0.0	0.0

Date: *04/16/07*

BreitBurn Energy Company 62.5 MMBtu Steam Generator # 1

BOILER / STEAM GENERATOR CALCULATION WORKSHEET (ver. 6.0)

DATA

Permit No.	A12084	
Owner/Operator	BreitBurn	
Facility/Lease	Orcutt Hill	
Boiler Type	Steam Generator	
Boiler Mfg.	Esys	
Boiler Model No.	no data	
Boiler Serial/ID No.	no data	
Boiler Horsepower	no data	Bhp
Burner Type	Gas, Ult Low Nox	
Burner Mfg.	No Am	
Burner Model No.	4231G-LE	
Max. Firing Rate of Burner	62.500	MMBtu/hr
Max. Annual Heat Input	547,500.000	MMBtu/yr
Daily Operating schedule	24	hrs/day
Yearly Load factor (%)	100	%
Fuel Type	Natural gas	
High Heating Value	1,050	Btu/scf
Sulfur Content of Fuel	23	ppmvd as H2S
Nitrogen Content of Fuel	-	wt. % N
Boiler Classification	Commercial	
Firing Type	Other Type	
PM Emission Factor	0.0060	lb/MMBtu
PM_{10} Emission Factor	0.0060	lb/MMBtu
NO_x Emission Factor	0.0110	lb/MMBtu
SO_x Emission Factor	0.0120	lb/MMBtu
CO Emission Factor	0.0190	lb/MMBtu
ROC Emission Factor	0.0040	lb/MMBtu

RESULTS

	lb/hr	lb/day	TPY
Nitrogen Oxides (as NO_2)	0.69	16.50	3.01
Sulfur Oxides (as SO_2)	0.23	5.55	1.01
PM_{10}	0.38	9.00	1.64
Total Suspended Particulate (PM)	0.38	9.00	1.64
Carbon Monoxide	1.19	28.50	5.20
Reactive Organic Compounds (ROC)	0.25	5.93	1.08

Hourly Heat Release	62.500	MMBtu/hr
Daily Heat Release	1,500.000	MMBtu/day
Annual Heat Release	547,500.000	MMBtu/yr
Rule 342 Applicability	547.5	Billion Btu/yr

ATTACHMENT B

IDS Tables

Table 1. Permitted Potential to Emit (PPTE)

	NO_X	ROC	CO	SO_X	TSP	PM_{10}
Diatomite Project						
lb/day	16.50	19.97	28.50	5.55	9.00	9.00
tons/year	3.01	2.59	5.20	1.01	1.64	1.64

Table 2. Facility Potential to Emit (FPTE)

	NO_X	ROC	CO	SO_X	TSP	PM_{10}
Newlove Lease						
lb/day	16.50	105.63	28.50	5.55	9.00	9.00
tons/year	3.01	17.86	5.20	1.01	1.64	1.64

Table 3. Facility Net Emission Increase Since 1990 (FNEI-90)

	NO_X	ROC	CO	SO_X	TSP	PM_{10}
Newlove Lease						
lb/day	49.50	46.29	85.50	16.66	27.00	27.00
tons/year	9.03	6.75	15.60	3.04	4.93	4.93

Table 4. Stationary Source Net Emission Increase Since 1990 (FNEI-90)

	NO_X	ROC	CO	SO_X	TSP	PM_{10}
Orcutt Hill Field						
lb/day	66.54	58.16	105.26	19.28	30.37	30.37
tons/year	10.35	8.82	17.70	3.42	5.54	5.54

Notes:

Table 2: Facility emissions include only Phase 1 Diatomite Project emissions.

Tables 3 and 4: NEI emissions include both Phase 1 and Phase 2 Diatomite Project emissions.

ATTACHMENT C

Facility and Stationary Source NEI

Facility Emissions Summary
Newlove Lease FID 3321

I. This Project's "I" NEI-90

Permit	Date	NOx		ROC		CO		SOx		PM		PM10	
No.	Issued	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr
A12084	6/5/2007	**33.00**	**6.02**	**26.32**	**4.16**	**57.00**	**10.40**	**11.11**	**2.03**	**18.00**	**3.29**	**18.00**	**3.29**

II. This Facility's "P1s"
Enter all facility "P1" NEI-90s below:

Permit	Date	NOx		ROC		CO		SOx		PM		PM10	
No.	Issued	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr
P11909	5/23/2006			1.50	0.27								
P12084	Feb. 2009	16.50	3.01	19.97	2.59	28.50	5.20	5.55	1.01	9.00	1.64	9.00	1.64
Totals		**16.50**	**3.01**	**21.47**	**2.86**	**28.50**	**5.20**	**5.55**	**1.01**	**9.00**	**1.64**	**9.00**	**1.64**

Notes:
(1) Facility NEI from IDS.
(2) Totals only apply to permits for this facility ID. Totals may not appear correct due to rounding.
(3) Because of rounding, values in this table shown as 0.00 are less than 0.005, but greater than zero.

III. This Facility's "P2" NEI-90 Decreases
Enter all facility "P2" NEI-90s below:

Permit	Date	NOx		ROC		CO		SOx		PM		PM10	
No.	Issued	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr
Totals		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Notes:
(1) Facility NEI from IDS.
(2) Totals only apply to permits for this facility ID. Totals may not appear correct due to rounding.
(3) Because of rounding, values in this table shown as 0.00 are less than 0.005, but greater than zero.

IV. This Facility's Pre-90 "D" Decreases
Enter all facility "D" decreases below:

Permit	Date	NOx		ROC		CO		SOx		PM		PM10	
No.	Issued	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr
P11909	5/23/2006			1.50	0.27								
Totals		**0.00**	**0.00**	**1.50**	**0.27**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Notes:
(1) Facility "D" from IDS.
(2) Totals only apply to permits for this facility ID. Totals may not appear correct due to rounding.
(3) Because of rounding, values in this table shown as 0.00 are less than 0.005, but greater than zero.

V. Calculated This Facility's NEI-90
Table below summarizes facility NEI-90 as equal to: I+ (P1-P2) -D

	NOx		ROC		CO		SOx		PM		PM10	
Term	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr
Project "I"	33.00	6.02	26.32	4.16	57.00	10.40	11.11	2.03	18.00	3.29	18.00	3.29
P1	16.50	3.01	21.47	2.86	28.50	5.20	5.55	1.01	9.00	1.64	9.00	1.64
P2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
D	0.00	0.00	1.50	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FNEI-90	**49.50**	**9.03**	**46.29**	**6.75**	**85.50**	**15.60**	**16.66**	**3.04**	**27.00**	**4.93**	**27.00**	**4.93**

Notes:
(1) Resultant FNEI-90 from above Section I thru IV data.
(2) Totals only apply to permits for this facility ID. Totals may not appear correct due to rounding.
(3) Because of rounding, values in this table shown as 0.00 are less than 0.005, but greater than zero.

Stationary Source NEI-90 Calculations
BreitBurn Energy Company LP Orcutt Hill Stationary Source

I. This Project's PTE Increase (Phase 1 and Phase 2)

Facility No.	Phase	Date ATC Issued	NOx		ROC		CO		SOx		PM		PM10	
			lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr
3321	1	6/5/2007	16.50	3.01	19.97	2.59	28.50	5.20	5.55	1.01	9.00	1.64	9.00	1.64
3321	2	6/5/2007	33.00	6.02	26.32	4.16	57.00	10.40	11.11	2.03	18.00	3.29	18.00	3.29
3321		Total	**49.50**	**9.03**	**46.29**	**6.75**	**85.50**	**15.60**	**16.66**	**3.04**	**27.00**	**4.93**	**27.00**	**4.93**

II. Facility FNEI-90 at this SSN
Enter all other facility NEI-90s below:

Facility No.	Date Revised	NOx		ROC		CO		SOx		PM		PM10	
		lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr
3206		0.00	0.00	1.78	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3313		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3314		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3316		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3318		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3319		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3320		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3321	Feb. 2009	49.50	9.03	46.29	6.75	85.50	15.60	16.66	3.04	27.00	4.93	27.00	4.93
3322		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3323		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3324		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3495		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4104		0.00	0.00	5.23	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4214		11.04	0.23	0.60	0.01	9.27	0.19	0.58	0.01	0.06	0.01	0.06	0.01
10482		6.05	1.09	4.26	0.77	10.49	1.91	2.04	0.37	3.31	0.60	3.31	0.60
1904		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes:
(1) Facility NEI from IDS.
(2) Totals may not appear correct due to rounding.
(3) Because of rounding, values in this table shown as 0.00 are less than 0.005, but greater than zero.
(4) Facility 3321 includes Diatomite Project Phase 1 (per PTO 12084) and Phase 2 (per ATC 12084)
(5) Facility 4104 includes the I and D terms documented in ATC 12767.

III. Calculate This SSN's NEI-90
Table below summarizes Source NEI-90 as equal to sum of each facility's (unless footnoted by an enforcebale NEI scenario)

Term	NOx		ROC		CO		SOx		PM		PM10	
	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr
SSN NEI-90	**66.59**	**10.35**	**58.16**	**8.82**	**105.26**	**17.70**	**19.28**	**3.42**	**30.37**	**5.54**	**30.37**	**5.54**

Notes:
(1) Totals may not appear correct due to rounding.
(2) Because of rounding, values in this table shown as 0.00 are less than 0.005, but greater than zero.

ATTACHMENT D

Fee Calculation Documentation

FEE STATEMENT
PTO No. 12084
FID: 03321 Newlove Lease / SSID: 02667

Santa Barbara County
Air Pollution Control District

Device Fee

Device No.	Device Name	Fee Schedule	Qty of Fee Units	Fee per Unit	Fee Units	Max or Min. Fee Apply?	Number of Same Devices	Pro Rate Factor	Device Fee	Penalty Fee?	Fee Credit	Total Fee per Device
109530	Steam Generator	A3	62.500	440.07	Per 1 million Btu input	Max	1	1.000	5,888.34	0.00	0.00	5,888.34
109487	Wash Tank	A6	230.160	3.36	Per 1000 gallons	No	1	1.000	773.34	0.00	0.00	773.34
109488	Clean Oil Tank	A6	88.200	3.36	Per 1000 gallons	No	1	1.000	296.35	0.00	0.00	296.35
109489	Reject Oil Tank	A6	88.200	3.36	Per 1000 gallons	No	1	1.000	296.35	0.00	0.00	296.35
109486	Produced Water Tank	A6	117.600	3.36	Per 1000 gallons	No	1	1.000	395.14	0.00	0.00	395.14
109497	Wellheads 1-30	A1.a	30.000	58.66	Per equipment	No	1	1.000	1,759.80	0.00	0.00	1,759.80
109516	Fugitive Components - Correlation Equation Method	A1.a	1.000	58.66	Per equipment	No	1	1.000	58.66	0.00	0.00	58.66
109482	Vapor Compressor	A2	20.000	30.41	Per total rated hp	No	1	1.000	608.20	0.00	0.00	608.20
109481	Vapor Compressor	A2	20.000	30.41	Per total rated hp	No	1	1.000	608.20	0.00	0.00	608.20
109463	VRU Inlet Heat Exchanger - Fin Fan	A2	5.000	30.41	Per total rated hp	No	1	1.000	152.05	0.00	0.00	152.05
109464	VRU Compressor Discharge Heat Exchanger - Fin Fan	A1.a	1.000	58.66	Per equipment	No	1	1.000	58.66	0.00	0.00	58.66
109483	VRU Condensate Pump	A2	0.500	30.41	Per total rated hp	Min	1	1.000	58.28	0.00	0.00	58.28
109484	VRU Condensate Pump	A2	0.500	30.41	Per total rated hp	Min	1	1.000	58.28	0.00	0.00	58.28
109495	Vapor Recovery Inlet Separator	A1.a	1.000	58.66	Per equipment	No	1	1.000	58.66	0.00	0.00	58.66
109496	Vapor Recovery Discharge Scrubber	A1.a	1.000	58.66	Per equipment	No	1	1.000	58.66	0.00	0.00	58.66
109462	Produced Gas Shell & Tube Heat Exchanger	A1.a	1.000	58.66	Per equipment	No	1	1.000	58.66	0.00	0.00	58.66
109465	HP Relief Condensate Pump	A2	5.000	30.41	Per total rated hp	No	1	1.000	152.05	0.00	0.00	152.05
109466	Folsom N Well Manifold Pump	A2	40.000	30.41	Per total rated hp	No	1	1.000	1,216.40	0.00	0.00	1,216.40
109467	Folsom N Well Manifold Pump	A2	40.000	30.41	Per total rated hp	No	1	1.000	1,216.40	0.00	0.00	1,216.40

109470	Oil Tank Battery Sump Pump	A2	2.000	30.41	Per total rated hp	No	1	1.000	60.82	0.00	0.00	60.82
109471	Produced Water Transfer Pump	A2	20.000	30.41	Per total rated hp	No	1	1.000	608.20	0.00	0.00	608.20
109474	Produced Water Transfer Pump	A2	20.000	30.41	Per total rated hp	No	1	1.000	608.20	0.00	0.00	608.20
109476	Reject Tank Pump	A2	10.000	30.41	Per total rated hp	No	1	1.000	304.10	0.00	0.00	304.10
109477	Reject Tank Pump	A2	10.000	30.41	Per total rated hp	No	1	1.000	304.10	0.00	0.00	304.10
109479	H2S Removal Vessel Drain	A2	20.000	30.41	Per total rated hp	No	1	1.000	608.20	0.00	0.00	608.20
109480	H2S Removal Vessel Drain Pump	A2	20.000	30.41	Per total rated hp	No	1	1.000	608.20	0.00	0.00	608.20
109490	Fuel Gas Scrubber	A1.a	1.000	58.66	Per equipment	No	1	1.000	58.66	0.00	0.00	58.66
109491	Three Phase Separator	A1.a	1.000	58.66	Per equipment	No	1	1.000	58.66	0.00	0.00	58.66
109492	Produced Gas Knockout Vessel	A1.a	1.000	58.66	Per equipment	No	1	1.000	58.66	0.00	0.00	58.66
109493	H2S Removal Vessel	A1.a	1.000	58.66	Per equipment	No	1	1.000	58.66	0.00	0.00	58.66
109494	H2S Removal Vessel	A1.a	1.000	58.66	Per equipment	No	1	1.000	58.66	0.00	0.00	58.66
109677	Filming Amine Injection System	A1.a	1.000	58.66	Per equipment	No	1	1.000	58.66	0.00	0.00	58.66
109678	Condensate Vessel - Low Point Drain	A1.a	1.000	58.66	Per equipment	No	1	1.000	58.66	0.00	0.00	58.66
109679	Progauge AWT #1	A1.a	1.000	58.66	Per equipment	No	1	1.000	58.66	0.00	0.00	58.66
109680	Progauge AWT #2	A1.a	1.000	58.66	Per equipment	No	1	1.000	58.66	0.00	0.00	58.66
109472	LACT Charge Pump	A2	20.000	30.41	Per total rated hp	No	1	1.000	608.20	0.00	0.00	608.20
109473	Sample Pump	A2	1.500	30.41	Per total rated hp	Min	1	1.000	58.28	0.00	0.00	58.28
109475	LACT Charge Pump	A2	20.000	30.41	Per total rated hp	No	1	1.000	608.20	0.00	0.00	608.20
109478	Oil Pan Drain Pump	A2	1.500	30.41	Per total rated hp	Min	1	1.000	58.28	0.00	0.00	58.28
	Device Fee Sub-Totals =								**$18,735.20**	**$0.00**	**$0.00**	
	Device Fee Total =											**$18,735.20**

Permit Fee

Fee Based on Devices **18,735.20**

Fee Statement Grand Total = $18,735

Notes:

(1) Fee Schedule Items are listed in APCD Rule 210, Fee Schedule "A".

(2) The term "Units" refers to the unit of measure defined in the Fee Schedule.

(3) This Fee Schedule is for Phase 1 devices only.

ATTACHMENT E

Response to Comments

In a letter dated October 3, 2008, BreitBurn Energy Company provided the following comments to the Santa Barbara County Air Pollution Control District concerning the draft PTO 12084/Part 70 Minor Permit Modification 12084 provided to BreitBurn by the District on August 25, 2008. The District's response follows each comment.

1. Condition B.11 requests compliance with MACT standards for oil and gas production facilities. The Orcutt Hill Stationary Source is currently exempt from MACT based on a combination of black oil exemption and for the area sources, an exemption was based on the API gravity of the crude being less than 40 degrees. The API gravity of the crude being produced at the Diatomite project has ranged from 13 -14 degrees. BreitBurn also has initial production data from the wells. BreitBurn Energy will make the necessary Notification in accordance with 40 CFR 63, Subpart HH and identify if the exemption will be based on the black oil or the area source exemption based on API gravity.

The District has verified that the Diatomite Project Phase 1 does not meet the MACT definition of a natural gas processing plant, and does not contain a glycol dehydration unit or storage vessel with potential for flash emissions. Therefore it is not an affected source per 40CFR63.760 (b) (1) and (2), and the requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAPS) for Oil and Natural Gas Production and Natural Gas Transmission and Storage (promulgated June 17, 1999) do not apply. [*Re:* 40 CFR 63, Subpart HH]

2. Condition C.2.d. requires the radiant section of the steam generator to be maintained at 1400 degrees to ensure destruction of the Diatomite produced gas. Due to limited stream quality water, BreitBurn cannot maintain the load on the steam generator that assures 1400 degree temperature. BreitBurn will be conducting an additional source test to determine if a 90% destruction efficiency can be achieved at 1200 degrees.

Results from additional source testing performed on January 24, 2008 show that 90% or greater destruction of ROC emissions from the Diatomite project produced gas is achieved in the permitted steam generator when the operating temperature in the generator's radiant section is in the range of 1275 deg F. Condition 9.C.2.d. has been changed to reflect the lowest average temperature at which such destruction has been demonstrated to occur.

3. Condition C.3. c. BreitBurn is requesting that the PUC gas is only sampled annually for higher heating value. The blended PUC and Orcutt Hill field gas and the Diatomite produced gas will be sampled quarterly.

The frequency for PUC gas higher heating value sampling has been changed to annual.

4. Condition C.3.d. This condition requires that the API gravity TVP for the crude oil be measured annually from each storage tank. There is only one crude storage tank T-340 (APCD Device Number 109487). The sample will be taken from that tank. During SCDP the District requested additional sampling form the wash tank, the results were lower. Please confirm that sampling from T-340 will be sufficient.

The District revised the permit condition to specify that the API gravity TVP for the crude oil may be measured annually at wash tank T-340 (APCD Device No. 109487), or at other tanks if requested in writing by APCD.

5. Condition C.3.h. The last sentence of the conditions refers to the 150 psi mixing point, in order to avoid confusion between nomenclature, it would be clearer to the field if the sentence referred to the 150 psi blending valve.

The text of this condition has been modified to better define the sampling point for weekly H2S detector tube sample and quarterly total sulfur samples.

6. The equipment list needs to be modified to include the model and serial numbers. The submittal made on February 11th is included for District reference, it includes APCD device numbers.

The equipment list has been modified to include model and serial numbers.
